



# GOODS MOVEMENT PROGRAM WHITE PAPER

A survey of Regional Initiatives and a  
Discussion of Program Objectives

January 2002



SOUTHERN CALIFORNIA  
**ASSOCIATION of GOVERNMENTS**

# The Southern California Association of Governments (SCAG) Goods Movement Program:

A survey of regional initiatives and a discussion of program objectives

A White Paper produced by the  
Southern California Association of Governments

January 2002

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## **Foreword**

The paper presents SCAG's Goods Movement Program through a discussion of recently completed, presently underway, and pending studies and projects. A more detailed discussion of the issues related to particular facilities and operations comprising the region's goods movement system can be found in the foundational documents upon which this presentation is based—these documents appear as the appendices to this paper.

The intention of this paper is to present a snapshot of the SCAG Goods Movement Program and establish a comprehensive view of goods movement activities within the region. As such, this White Paper will serve its purpose best if it is viewed as an overall context for the discussion of priorities and projects comprising SCAG's Goods Movement Program.

## **A. Regional Goods Movement - System Overview**

### **I. Introduction**

This paper reviews the system of goods movement within the six-county Southern California Association of Government's (SCAG) region, and discusses the priorities, objectives, and scope of SCAG's Goods Movement Program.

### **II. Goods Movement System**

The movement of goods within the region is accomplished through a complex system of transportation structures and institutions. The physical features of this system include sites for collecting and dispatching freight, referred to here as nodes; and lengths of road-, rail-, air-, and waterways used in the transport of freight (along with the means of transport over each), or modes. Together these nodes and modes traverse and connect the region, linking the region with the rest of the state and the nation, thereby helping to sustain a robust economy and contributing to Southern California's distinct quality of life.

Freight is presently gathered to and dispersed from:

- The seaports of Hueneme, Long Beach, and Los Angeles;
- Five of the region's cargo-capable commercial airports;
- Six rail inter-modal transshipment yards; and
- An array of trucking centers, warehouses, and manufacturing and retailing venues.

Between these points and beyond the region's borders, goods are transported via:

- Maritime shipping lanes;
- Commercial air routes;
- Eight railroad main lines used by two Class 1 railroads, additional branch lines, and four short line railroads; and
- Federal and state highways, along with major local arterial streets.

This regional complex of transportation features is depicted graphically in Figure 1.

The benefits of this overall goods movement system accrue to the region through the value of goods shipped, the wages earned in direct and indirect employment, and the tax revenues these activities generate for local and state governmental entities. Goods movement in and through the SCAG region contributes as well to the nation's welfare to the extent that international trade flows handled by the region allow the economy to achieve productivity and investment levels in excess of its inherent capabilities. Propelled by historic and forecast rates of regional, national, and international economic growth, as well as by the region's increasing population, the volume of goods moving through the region's transportation system continues to expand dramatically. Table 1 demonstrates the rate of cargo growth being experienced by the different modes of transport in the SCAG region:

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Table 1  
Freight Volume Growth SCAG Region 1995-2020 (million tons)

	1995	2020	Increase
Rail	91	309	240%
Truck	319	527	65%
Air	2.2	8.9	304%
Sea <sup>1</sup>	93	214	130%

Should these anticipated rates of growth be realized (and to date they are in some cases actually being exceeded), maintaining adequate regional mobility by preserving the efficiency and reliability of the region's entire transportation system will constitute a monumental challenge. To meet this challenge a comprehensive regional approach will be essential.



Figure 1, Regional Transportation System (air routes and shipping lines not shown)

### III. SCAG's Goods Movement Program

SCAG, as the legislatively mandated Metropolitan Planning Organization (MPO) for the region, is charged with the development of a coordinated and cohesive long-range transportation plan that addresses the priorities of the entire region. To satisfy this obligation, as well as federal regulations that pertain to federally-designated air quality non-attainment and maintenance areas, SCAG produces a regional transportation plan every three years. The **2001 Regional Transportation Plan<sup>2</sup>** (RTP) represents a comprehensive and broad-based effort to frame and address critical transportation issues facing the region, and the

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regional goals and policies established by SCAG to guide development of the RTP relate as well to the challenges now confronting the goods movement system. These goals are to:

1. Improve transportation mobility for all people and enhance the movement of goods within the subregions and the Region.
2. Ensure that transportation investments are cost-effective, protect the environment (including improving air quality), promote energy efficiency and enhance the quality of life.
3. Serve the public's transportation needs in safe, reliable, and economical ways that also meet the individual needs of those who depend on public transit, such as the elderly, handicapped, and disadvantaged.
4. Develop regional transportation solutions that complement the subregional transportation systems and land-use plans of communities within the subregions.
5. Promote transportation strategies that are innovative and market-based, encourage new technologies, and support the Southern California economy.
6. Encourage land-use and growth patterns that enhance the livability of our communities and maximize the productivity of transportation investments.

SCAG's Goods Movement Program draws upon these goals to establish a set of priorities for use in evaluating studies and project initiatives. The studies and projects rated highly in this process work to shape a comprehensive and cohesive strategy for the development of goods movement infrastructure and facilities throughout the region. These priorities are:

1. Economic Efficiency;
2. Congestion Mitigation;
3. Safety Improvement;
4. Air Quality Improvement; and
5. System Security.

For any given study or project proposal, a number of these priorities may work to complement or to conflict with one another. SCAG's Goods Movement Program seeks to identify and advocate those transportation initiatives and projects of regional significance that, on balance, will work to optimize the goods movement system across this set of priorities.

The necessity of regionally prioritizing and optimizing public expenditures on goods movement infrastructure development initiatives is apparent in the funding requirements identified in the RTP. Table 2 shows that the region's identified goods movement improvement needs exceed known sources of available public funding by 62%.

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Table 2  
RTP Identified Goods Movement Funding Needs (1997 currency)

Baseline	\$	3.16	billion
Constrained	\$	5.41	billion Public
Constrained	\$	1.94	billion Private/Other
Unconstrained	\$	3.37	billion
Total	\$	13.88	billion

The impending confluence of increased trade and goods movements moving over infrastructure facilities that are already strained to capacity outlines a rather dire future scenario. The region's 17 million residents, and the 7.4 million jobs that sustain their lifestyles, rely on the mobility afforded by existing infrastructure developments. Maintaining sufficient regional mobility for both passengers and freight represents a regional imperative. And yet, even with the full implementation of the public and privately funded projects set forth in the RTP, key segments of the region's road and rail networks will experience significantly greater congestion by the year 2025.

The balance of this paper surveys recent goods movement developments and studies that have been pursued in the region by SCAG and various other transportation agencies and operating entities. This survey progresses through the nodes and modes comprising the regional goods movement system, seeking to gather salient data and facts across a broad range of studies and projects, and in turn concentrating and focusing this information to identify those future goods movement initiatives that offer the greatest possible promise in realizing the region's goods movement priorities. Highly rated opportunities will be characterized by their significance to the regional goods movement system as a whole, and by their ability to simultaneously address the frequently conflicted set of goods movement priorities. As identified and ordered by these criteria, the studies and projects that emerge from this exercise will work to direct the efforts and resources of SCAG's Goods Movement Program as it prepares its recommendations for reauthorization of federal transportation legislation, and its priorities for the 2004 Regional Transportation Plan.



## **B. SYSTEM COMPONENTS**

### **I NODES**

#### **I.1 Marine Ports**

International trade through the Los Angeles Customs District, of which the ports of Long Beach and Los Angeles form a significant part, is expected to nearly triple, from \$230 billion to 661 billion, between the years 2000 and 2020—provided that no obstacles arise in the inland surface transportation system to constrict this growth. The ports of Long Beach and Los Angeles form a combined port facility commonly referred to as the San Pedro Bay ports, which presently handles 80% of California's and 30% of the nation's maritime trade shipments. These ports are planning to invest \$6 billion over the 25 years on an ambitious infrastructure development program that will include the widening of arterial streets, freeway ramp upgrades, railroad grade separations, rail yard expansions, and ITS improvements to improve ground access management to complement the expansion of terminal facilities.



Image 1, Aerial view of the Port of Los Angeles

#### Port of Los Angeles

The Port of Los Angeles, founded in 1907, occupies a site of over 7,500 acres along 35 miles of shoreline and is home to 29 major cargo terminals, including world-class container facilities as well as terminals dedicated to the handling of automobiles, break-bulk, dry bulk, and liquid bulk cargoes. The port's newest container complex, Pier 400, is nearing completion and will become the world's largest proprietary container terminal, including at

least 12 shore-side cranes and an intermodal transfer facility capable of handling four complete double-stack trains on 12 loading tracks.

Administratively the port is a department of the city of Los Angeles and is governed through a five-member Board of Harbor Commissioners whose members are appointed by the Mayor and confirmed by the Los Angeles City Council. The port operates as a landlord port, where the Port of Los Angeles leases its property to tenants who in turn operate their own facilities.

In fiscal year 2001, the port handled a record 4.9 million twenty-foot equivalent units (TEUs) in container units (an increase of 27.44% over the previous year) and 113.9 million metric tons of cargo tonnage, together representing a total cargo value of \$113.9 billion.<sup>3</sup> This activity generated \$97.7 million net income for the port on operating revenues of \$273.5 million, and provided 259,000 direct and indirect jobs in Southern California region. From the \$8.4 billion in wages earned by these positions, state and local jurisdictions realized \$1.4 billion in tax revenues.

The port is well on the way to completing a number of container handling and capacity enhancing capital development projects that were incorporated in the **2020 Port Master Plan**.<sup>4</sup> Most significantly, the port has achieved dredged channel depths of up to 81 feet, providing waterside capabilities sufficient to accommodate the largest container vessels presently envisioned. Four modern on-dock intermodal container terminal have been built, and with the addition of a fifth on-dock rail yard now being completed at Pier 400, the port will be operating a total of 31 loading tracks capable of handling 243 five-platform double-stack rail cars. To improve ground access through major traffic routes in the port area, the port has spent more that \$200 million on grade separation and bridge replacement projects.

These capital investments in greater cargo handling capacity for the port have been made in order to accommodate anticipated growth in international trade. It is forecast that the value of trade flows through the Los Angeles Customs District will increase by 187% between 2000 and 2020<sup>5</sup>. If container volumes at the port were to increase by the conservative estimate of 5% annually<sup>6</sup>, by 2025 more than 15 million TEUs would be moving through the port and out through the region's goods movement system.

### Port of Long Beach

The Port of Long Beach, established in 1911, is situated just to the southeast of the Port of Los Angeles on 3,000 acres. Eight major container facilities operate 44 cranes, and five of these terminals have on-dock rail facilities to handle double-stack intermodal shipments. Other terminal facilities at the port specialize in break-bulk, dry bulk, and liquid bulk shipments.

Similar to the Port of Los Angeles, the Port of Long Beach functions as the City of Long Beach Harbor Department, with its Board of Harbor Commissioners appointed by the Major and confirmed by the City Council. This port also operates primarily as a landlord port, with tenants developing and operating their own facilities.

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The port saw 40.8 million metric tons of cargo and 274,042 automotive units move across its docks in the year 2000, along with 4.6 million TEUs of container freight, for a combined value of \$98.2 billion in goods movement. By 2020, the volume of TEUs are forecast increase by 260%, or to 16,638,500.

A net income of \$70.8 million on operating revenues of \$255 million has been budgeted for 2001 fiscal year.<sup>7</sup> An estimated 260,000 direct and indirect jobs are generated through activities related to port operations, and wage and tax revenue values are comparable to those of the Port of Los Angeles.

Presently the port is building a 389-acre, \$576 million container cargo facility at the new Pier T terminal, which is scheduled to commence operations by July 2002. This facility is in addition to a number of other terminal development and consolidation projects designed to enhance the port's near-term cargo handling capacity. To handle projected cargo growth, the port is planning a \$1.9 billion program to consolidate and redevelop seven terminals, and to build two new terminals.<sup>8</sup>

### Port of Hueneme

The Port of Hueneme's ***New Millennium Development Plan***<sup>9</sup> calls for an ultimate build-out of the port to occupy 199 acres with 9,600 linear feet of dockside capable of accommodating up to 15 berths. The port presently operates as the number 1 seaport in the U.S. for citrus export, with its top international trading partners being Brazil, Costa Rica, Ecuador, Germany and Japan. The port has terminal space available for Auto/Vehicle, Refrigerated Warehousing, Break-Bulk/Neo-Bulk, Containers, Liquid Bulk, and Fishery operations.

The port is established within the Oxnard Harbor District, a political sub-division of the State of California that was created in 1937. The Oxnard Harbor District's policies are set by a five-member Board of Harbor Commissioners elected at large from the District.

In 2000, the port prepared to handle 197,000 automobile units, 900,000 metric tons of cargo, and 66,000 TEUs of containers. These cargo shipments are valued at \$4 billion, and the port reports that this activity supports 3,500 jobs in Ventura County and generates \$24.3 million in city and county tax revenues.

In addition to expanding its port facilities, the port has contributed \$2,000,000 to developing the Port Intermodal Corridor (Rice Avenue extension). These capacity enhancements are designed to accommodate a 400% increase in cargo shipments, a 240% increase in automobile units, and a doubling of the TEUs that the port expects to handle by 2020.

### Regional Marine Port Issues and Related Studies

The development of greater cargo handling capacities at each of the region's three marine ports, and the increased volumes of freight that are expected to pass through these ports and over the region's surface transportation systems, will have a region-wide impact on economic efficiency, traffic congestion, vehicle safety, and transportation security. In line with current

forecasts, by 2020 the increased activities of the ports will increase daily truck trips along the nine major truck routes in the region by 70%, adding to congestion, vehicle emissions, and traffic accidents on the region's highways and major arterial streets. Similarly, daily rail trips along the UP and BNSF mainlines through the region will experience increases of 151% and 154%, respectively.<sup>10</sup> Given these increases, it is envisioned that on-dock rail facilities could handle 30% of the container throughput, with the balance drayed to inland rail yards. In this case, the three main inland rail yards serving the ports (ICTF, UP East Los Angeles, and BNSF Hobart) would experience a capacity deficit of up to 265,000 TEU/month.<sup>11</sup>

The rail and truck trips generated by the ports severely impact local streets and interchanges that link the ports to major surface systems. SCAG and the Ventura County Transportation Commission conducted the *Port of Hueneme Access Study*<sup>12</sup> in 2000, and the ports of Los Angeles and Long Beach have jointly prepared the *POLB/POLA Transportation Study*<sup>13</sup> this year. These studies identified intersection widening, intersection signalization, roadway re-alignment, roadway widening, and intelligent transportation system projects with the potential to relieve local congestion and improve safety as well as efficient highway access.

Also aimed at relieving congestion near the ports and on key highway links by reducing truck trips, an *Empty Container Study*<sup>14</sup> is presently being directed by SCAG to look at how the movements of empty containers and deadheaded drayage runs might be minimized. Reducing these movements and trips could be accomplished if timely information about the location and condition of empty containers could be made available trucking and logistics firms. Concerns over limited interchangeability between cargo types and container types, and institutional practices such as the shipping lines wanting to keep control over their own containers, may limit the extent to which relocation trips can be reduced. Liability problems too will restrict flexible container responses to shipping requirements. Nevertheless, the potential number of trips that could be reduced remains significant, and the reduction of these trips would help to lessen congestion, emissions, and the number of accidents along I-710 in particular. In a complementary study, *Reengineering Empty Container Logistics in the SCAG Region*<sup>15</sup>, METTRANS is looking at the issues involved with the institutional practices that tend to impede the sharing and reuse of containers, as well as at several technological innovations being developed in Asia, such as "collapsible containers," that would also provide a means of minimizing empty container trips.

Long queues and excessive waiting times for drayage trucks at the San Pedro Bay impinge on the efficiency of regional transportation and contribute to vehicle emissions and local congestion. Primarily this problem relates to the operating hours, or gate times, of terminal operators. To avoid overtime premiums on stevedoring and other unionized port services, terminal operators tend to restrict terminal hours by only opening their gates from 8AM to 5PM. The elimination of such institutional constraints on the goods movement system would improve economic efficiency and reduce congestion and vehicle emissions. A technological means of minimizing truck wait times at the ports appears in the container information management services being developed and provided by eModal.

To assess the private sector's inclination to accommodate corridor user fees, SCAG is initiating a *Port and Modal Diversion Study*<sup>16</sup>. This study is designed to gauge the demand

elasticities between competitive ports as they relate to the imposition of possible corridor use fees, and to the choice between competing truck and rail services in relation to freight rates.

## **I.2 Airports**

The RTP Aviation Plan forecasts that 9.5 million tons of air cargo will be handled by the region's cargo-capable airports in the year 2025. That amount of activity would represent a 265% increase in volume over the 1997 movements of 2.6 million annual tons (MAT). To meet this anticipated future demand, the RTP calls for both an expansion of existing commercial service airports and the development of several new facilities at former military air base sites, including the El Toro Marine Corps Air Station, Norton Air Force Base (San Bernardino International Airport), George Air Force Base (Southern California Logistics Airport), March Air Reserves Base (March Global Port), Palmdale Regional Airport, and Point Mugu. The Regional Aviation Strategy seeks to disperse commercial aviation capacities throughout the region, thereby relieving operational and congestion pressures at LAX and other constrained airports in urban centers. This dispersal of activities is also intended to foster the expansion of facilities in proximity to the geographic areas of anticipated growth.

Air cargo enters the region through one of the region's five currently operating cargo-capable commercial airports. Each of these airports possesses a unique set of cargo handling characteristics, and the RTP is designed to optimize the efficiency of the overall air cargo system by capitalizing on the relative strengths of each facility.

### Los Angeles International (LAX)

LAX is owned and operated by Los Angeles World Airports (LAWA), which has this year completed a comprehensive revision of the **LAX Master Plan**. LAX functions as the primary airport in the region, handling 79% of the region's air cargo (2.06 MAT) in 1997.<sup>17</sup> Cargo facilities operated by airlines and cargo shippers and integrators occupy 2 million square feet of building space on about 200 acres of land: the total land area of LAX is 3,500 acres. A significant number of off-airport freight-forwarding facilities are also located in close proximity to the airport. The majority of air cargo passes through LAX primarily because shippers are able to rely on commercial passenger air carriers for spot or contracted cargo transport. Approximately 46% of LAX cargo is carried in the bellies of passenger aircraft. Because of the large number of cities served by passenger airlines out of LAX, cargo shippers are able to offer worldwide service without having to operate dedicated freighters.

The RTP forecast that cargo volume will increase to 2.98 MAT at LAX by 2025. As part of the Master Plan update, off-airport ground transportation was analyzed to assess present and future levels of service. This study found that future increases would be manageable, as (1) airport traffic peaking characteristics are at mid-day whereas the regional system peaks are a.m. and p.m., (2) airport traffic is distributed over 12 major access routes including arterial streets and freeways, and (3) airport traffic represents a small share, 13%, of total traffic on regional roadways. The RTP identifies 8 ground access projects in the vicinity of LAX valued at \$67,142,000.

Ontario International Airport (ONT)

ONT handled 18%, or .47 MAT, of regional air cargo in 1997. Owned by the City of Los Angeles and operated by LAWA, ONT occupies a site of 1,463 acres and is well situated within the regional ground transportation system. UPS operates an express package service hub out of ONT.

Given its proximity to major surface facilities—the I-10 Freeway to the north, the I-15 to the east, and the Pomona Freeway to the south—as well as ample space available for the expansion of facilities, ONT is forecast to increase its volume of cargo traffic to 2.25 MAT by 2025, a 379% increase.

SCAG, in association with the City of Ontario and SANBAG, is commencing an ***Ontario International Airport Ground Access Study***<sup>18</sup> to analyze how these regional freeways and local arterial roadways might best accommodate this increase in air cargo shipments.

Regional Airport Issues and Related Studies

The other commercial airports with existing cargo activity are Burbank (BUR) with .04 MAT, Long Beach (LGB) with .03, and John Wayne (SNA) with .02. The RTP calls for relatively slight increases in air cargo volumes at these airports by 2025, up to .07, .06, and .03 MAT respectively, and for the introduction of air cargo activities at El Toro, March Global Port, San Bernardino, Southern California Logistics, Palmdale, and Palm Springs airports for a combined accommodation of 4.11 MAT. These regional air cargo capacity enhancements are presently being reviewed as part of SCAG's ***2001 Regional Air Cargo Study***<sup>19</sup>.

Similar to the efforts completed recently for LAX and presently underway at ONT, ground access studies at each of the cargo-capable airports are envisioned.



Image 2, Air Cargo loading



### I.3 Rail Intermodal Centers

In addition to on-dock rail facilities at the marine ports, six rail intermodal centers are operating in the SCAG Region. The Intermodal Container Transfer Facility (ICTF) is situated some five miles inland from the San Pedro Bay ports, and is owned and operated by the UP as a multi-user facility. Near downtown Los Angeles the UP also operates the LATC and East LA yards, and to the east the City of Industry facility. BNSF handles intermodal movements at the Hobart yard downtown, and at the San Bernardino yard to the east. These facilities are shown in Figure 2 together with their 25-mile radius catchment zones.

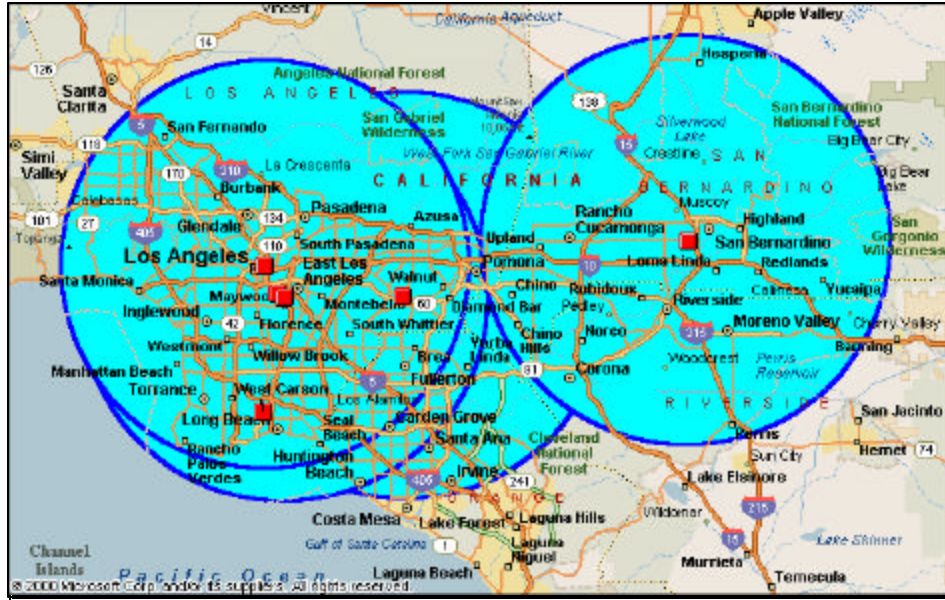


Figure 2, Rail Intermodal Yards

Both the location and functionality of these centers work to form a tiered system of intermodal distribution in the region, with industries and third-party logistics firms strategically situated in proximity to these rail intermodal centers and the regional freeway network. The tiered nature of these centers emerges through:

- on-dock terminals and the ICTF that are at the southern end of the Alameda Corridor and a future I-710 truck lane facility, which are in close proximity to a number of third party logistics firms in the South Bay area;
- the downtown rail yards are at the north end of the Alameda Corridor and at the west end of three main railroad lines, and near the junction of I-710, SR-60, and I-5 truck lanes, with considerable industrial development in the vicinity;
- Industry rail yard is located on two of the main railroad lines, and is close to the proposed SR-60 truck lane facility and the point where the 605 freeway crosses the 60, and is also close to considerable industrial development;
- The San Bernardino yard is near the junction of major rail lines and freeways. At least one of the potential new intermodal facilities in the Inland Empire would likely be close

to warehousing complexes in the Ontario-Fontana area and the junction of SR-60 and I-15 truck lanes;

- High desert facilities in the Barstow area would have access to several main lines, and would be north of the end of the I-5 truck lane facility, with some growing industrial/warehousing clusters in the vicinity.

### Inland Ports

The growth of international trade expected to flow through the San Pedro Bay ports over the next two decades threatens to overwhelm the capacities of existing intermodal rail yards. The rail yards are expected to have a capacity of 393,000 TEUs per month, leading to a capacity deficiency of 265,000 TEUs per month by 2020.<sup>20</sup> To address these eventual deficiencies, the RTP recommends the creation of one or more inland port facilities in the Inland Empire. It is conceivable that shuttle trains could be used to transfer marine containers directly from the ports to these inland sorting and consolidation centers, from where transcontinental trains would be built up to carry cargo further inland. As a corollary to shuttling outbound cargo from the ports, return trains could convey domestic containers, truck trailers, and empty marine containers between the inland ports and the downtown rail yards. Both the outbound and inbound shuttling of cargo by train would lessen the number of truck movements along the crucial I-10, SR-60, and SR-91 east-west corridors. Additionally, it is likely that these inland ports would attract investments in industry, warehousing, and freight forwarding to their immediate vicinities, thereby providing for economic growth and displacing trips away from the congested urban centers. The *WRCOG Inland Port Study*<sup>21</sup> presently underway is looking at the potential of inland ports.

### **I.4 Truck Distribution Centers and Warehouses**

These facilities represent a diffuse array of venues and functional building types, and SCAG is presently conducting a *Warehouse Logistics Study*<sup>22</sup> to discern the capacities and operating characteristics of these centers. The land-use data and information regarding trip generation and route choice gathered in this study will help to calibrate and refine the *SCAG Heavy Duty Truck Model*<sup>23</sup> (HDT), and assist in the implementation of truck lanes and truck climbing routes included in the RTP.

Additionally, arterial routes that extend beyond the region function as virtual trip generation centers or ports of entry. In particular the Calexico East Port of Entry (POE) has been studied in the *Imperial County Transportation Plan*<sup>24</sup>, which recommends arterial widening and intersection improvements for the system of federal and state highways serving the Calexico East POE.



## **II. MODES**

### **II.1 Sea Lanes**

Along with a trend toward greater concentration in the industry, ocean carriers are seeking economies of scale by building ever-larger container vessels. The average size of new containerships, including 3<sup>rd</sup> generation Panamax and 4<sup>th</sup> generation Post-panamax ships, is more than 5,000 20-foot equivalent units (TEU)—twice that of 20 years ago. A 5<sup>th</sup> generation of mega-container ships with a capacity of greater than 6,000 TEUs are already in service, and future versions could run 8,000 TEUs or more.<sup>25</sup>

At the Port of Los Angeles, 2,899 ships called at the port in fiscal year 2001, representing 80 shipping lines and 8 cruise lines. The major trading partners dealing through the port were China (\$29.9), Japan (\$26.3), Taiwan (9.6), South Korea (\$4.6), and Ecuador (\$4.1).



Image 3, Container Ship

### **II.2 Air Routes**

The region's air service network is exemplified in the greater than 80 US and foreign airlines that provide service to 130 worldwide destinations out of LAX. LAX also handles 87% of the region's long-haul flights and virtually all of the international air service to Asia and Latin America.

Presently the FAA is conducting a nation-wide *Federal Airways Redesign Study*<sup>26</sup>, which in this region will eventually complement a long-term air route study planned by SCAG in 2003.

## II.3 Rail Alignments

Rail transportation services for goods movement are provided in the SCAG region along five principle rail alignments, which are each owned by one of the two Class 1 railroads operating in the region: the Union Pacific Railroad (UP) and the Burlington Northern Santa Fe (BNSF). The majority of rail freight operations move along the main-lines of each railroad—the San Bernardino Subdivision between Barstow and downtown Los Angeles for BNSF, and the Los Angeles Subdivision and Alhambra Subdivision for UP. BNSF’s main-line runs over 64 miles of double, triple and some quadruple tracks, and the two main UP alignments include 119 miles of single, double, and triple track, inclusive of some 7 miles of trackage rights on BNSF lines.<sup>27</sup> Additionally, there are four short-line railroads that operate in the region as feeder lines, shuttling cars and equipment in and between the marine ports and rail intermodal yards. These main rail alignments are shown in an overall graphic of the region’s geography in Figure 3 below.

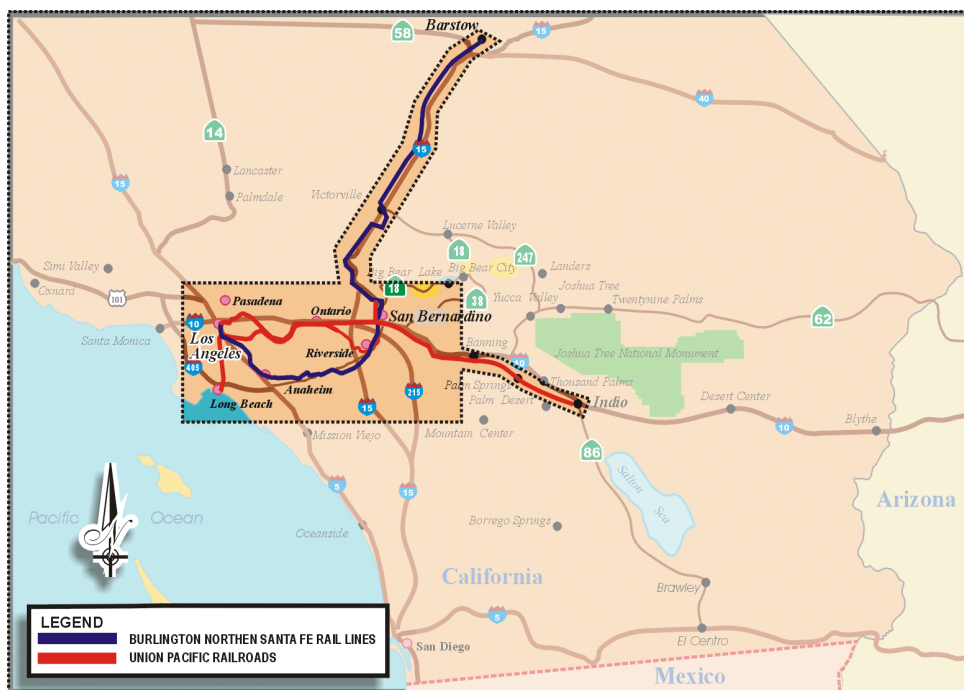


Figure 3, Regional Class 1 Rail Alignments

Presently these lines handle up to 57 and 59 freight trains per day along their most heavily used line segments, and these utilization figures are forecast to increase to as many as 120 and 130 by 2025. In 2000 the average delay on BNSF's line was 31.9 minutes, and on UP's 30.4 minutes. Holding the number of passenger trains that share these lines with freight operations constant (though both Metrolink and Amtrak are planning to increase the number of trains they operate), without the addition of more tracks, flying junctions and grade separations, average delay per train will escalate rapidly and lead to a failure of the system well before 2010.<sup>28</sup>

*The Los Angeles-Inland Empire Main Line Study*<sup>29</sup> being conducted by SCAG and the LAEDC, have developed simulations of improved track capabilities and operating

modifications that have the potential to actually lower average delay to 28.9 minutes on the BNSF line, and to 12.3 minutes on UP lines. This diminution in average delay occurs with the increased operations of passenger trains included in the simulation.

These simulations also include the *Alameda Corridor*<sup>30</sup> as operating at design capacity. This corridor is scheduled to commence service in 2002, and will provide a double- and triple-tracked rail link between the San Pedro Bay ports and the intermodal rail centers near downtown Los Angeles. Recognized world-wide as an inspired example of multi-jurisdictional and multi-modal planning, this corridor developed from its inception at SCAG to form a 20-mile rail cargo expressway linking the San Pedro Bay ports to the downtown rail yards. The project achieves grade separations at more than 200 street-rail intersections, and features a 10-mile long, 50-foot wide trench traversing the cities along its center section.



Image 4, Alameda Corridor Trench

Construction and operation of this \$2.4 billion corridor is being managed by a California Joint Powers Authority created by the cities of Long Beach and Los Angeles. Funding for the project centered on \$1.165 billion in revenue bond proceeds supported by a \$400 million loan from the US DOT, a \$394 million infusion of capital from the San Pedro Bay ports, and \$347 million contributed by the LACMTA. The bonds will be retired through user fees paid by the railroads for containers and railcars transiting the corridor.

#### Regional Rail Alignment Issues and Related Studies

Building on the success of the Alameda Corridor concept, the *Alameda Corridor-East*<sup>31</sup> project is included in the RTP to provide a system of grade separations and isolated rail right-of-ways extending from the north end of the Alameda Corridor near downtown Los



Angeles eastward along the UP lines to Pomona. Similarly a series of grade separations are included for the seven-mile long **Orangethorpe Corridor**<sup>32</sup> along the BNSF line through Orange County. A key structure that will greatly enhance the operating efficiency of the entire regional rail system is the rail/rail grade separation project included for the **Colton Crossing**<sup>33</sup>.

**The LA-Inland Empire Main Line Study**<sup>34</sup> is looking at specific capacity improvements that will be required along the main lines of the two railroads between downtown Los Angeles and the Colton Crossing. The **Truck and Rail Study**<sup>35</sup> is evaluating the markets served by trucks and freight rail as well as future trends in rail service in order to make recommendations on required capacity improvements. Furthermore, the **Trans-Basin Train and Vehicle Mitigation Study**<sup>36</sup> is investigating whether public-private partnerships in combination with innovative public financing packages has the potential to generate new funding sources for main line improvements.

These corridor projects, consisting of grade separations and trackage improvements, simultaneously work to achieve several of the Goods Movement Program's priorities by improving efficiencies, reducing congestion and vehicle emissions, improving safety, and, perhaps even more importantly, affording greater system security by establishing redundancies for both routes and transportation modes.

Some additional, longer-term rail corridor concepts are included in the RTP for consideration; namely the **Southwest Corridor**<sup>37</sup> and the preservation of local rail corridors.

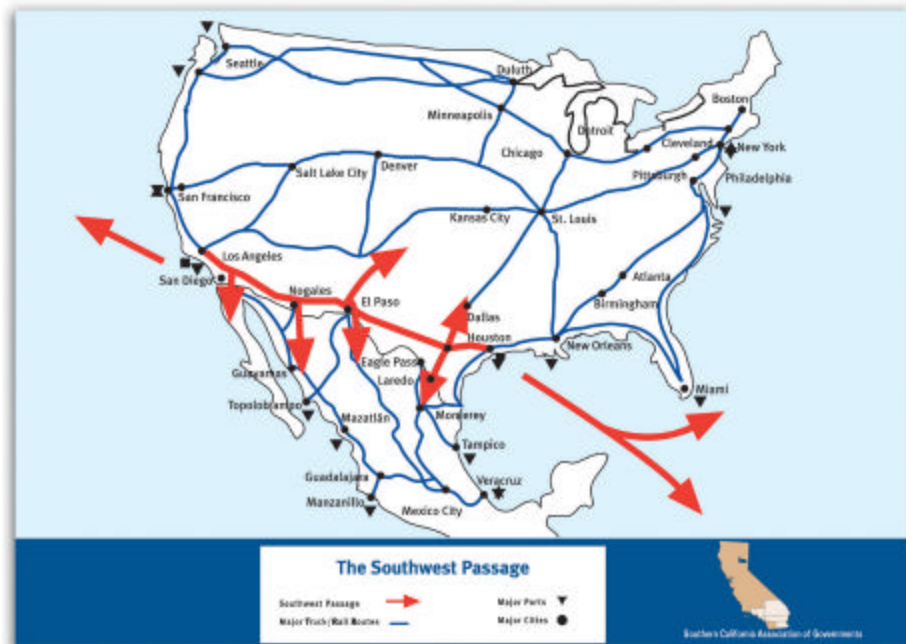


Figure 4, Southwest Passage

## II.4 Highways and Major Arterials

The SCAG Region has one of the most extensive networks of highways and arterial streets in the nation. In 1997 this network included 8,906 miles of freeway, 14,998 miles of principal arterial streets, 17,605 miles of minor arterial streets, 8,262 miles of major collectors, and 582 miles of HOV lanes.<sup>38</sup> SCAG's (HDT) estimates that in 2002 this network will carry 795,000 average daily trips, which equates with 25,500,000 of vehicle miles traveled (VMT).<sup>39</sup>



Figure 5, Plot of Heavy Duty Truck Model

The Federal-aid highway program began in 1916 with the original matching ratio of 50-50 between federal and state funds. Today the matching ratio is 80-20 for most projects and 90-10 for Interstate projects. The program expanded in 1956 to fund the Eisenhower System of Interstate and Defense Highways, with the Federal Highway Trust Fund providing funds attained from highway users, primarily through fuel taxes. The Intermodal Surface Transportation Act Efficiency Act of 1991 (ISTEA) expanded federal funding for transportation and instituted important new policy goals; specifically by providing more flexibility to state and local governments in determining transportation solutions, by promoting new technologies such as Intelligent Transportation Systems (ITS) and magnetic levitation systems, and by making highway funds available environmental, preservation, bicycle, and highway beautification projects. Reauthorization and continuation of ISTEA policies occurred with the Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21) in 1998. TEA-21 guaranteed levels of federal funding and maintained flexibility in the application of funds through the 2003 fiscal year. Discussion are beginning in anticipation of the next major

authorizing legislation for surface transportation, and it is likely that this legislation will enact new policies and priorities in favor of goods movement and system security initiatives.

#### Regional Roadway System Issues and Related Studies

Heavy and recurrent congestion on major freeways represents a primary challenge to the region's transportation system. SCAG estimates that by 2025 vehicle miles traveled (VMT) for all classes of vehicles will increase by 42%, and that heavy-duty truck mileage will increase by 70%. This additional activity will cause the average speed across the region to decrease to 33.24 from 38.21 miles per hour. This region-wide deceleration occurs even with the implementation of the infrastructure improvements contained in the RTP, which include truck climbing lanes and grade separated truck lane segments along the SR-60 and I-15.

The RTP includes \$15 billion for highway and arterial improvement projects to address efficiency and capacity challenges. These capital improvements are slated for mixed-flow lanes, interchanges, truck climbing lanes, and truck lanes and grade crossings. The Goods Movement Program has focused on studies and projects designed to evaluate the feasibility and requirements of truck climbing lanes and grade-separated truck lanes. The ***SR-60 Truck Lane Feasibility Study***<sup>40</sup> conditionally confirmed the feasibility of a truck lane system, estimating that by the year 2020 a four-lane (two lanes in each direction) facility would be required to accommodate truck demand. Truck lanes were discussed as an alternative in the ***I-5 Major Investment Study***<sup>41</sup> concluded by LACMTA, and are also being studied in the ***I-710 Corridor Study***<sup>42</sup> being conducted by LACMTA and the ***I-15 Comprehensive Study***<sup>43</sup> initiated by Caltrans District 8. A depiction of the planned improvements to the region's highway system, including the truck climbing lanes and dedicated truck lanes, appears in Figure 4 below.

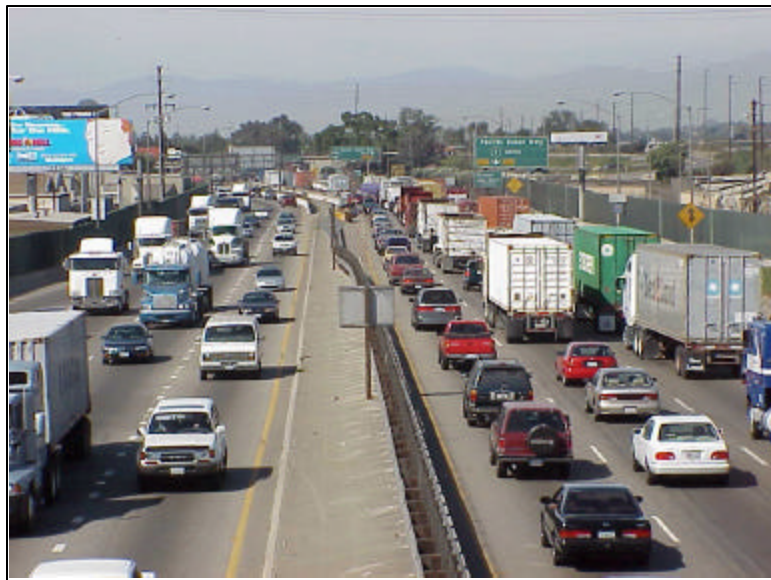


Image 5, I-710

Dedicated truck lanes, along with truck climbing lanes, offer the potential to keep goods moving efficiently through the region while mitigating congestion for passenger vehicles,

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improving safety, and lowering overall emissions. Though not considered previously, the contribution that grade separated truck lanes would make to the security of the transportation system throughout the region needs to be assessed in subsequent evaluations of these facilities. Current cost-benefit analysis of the 35.1 miles of truck lanes included in the RTP shows that, in comparison to alternative public investment, the truck lanes offer a favorable return (Table 3).

It has been estimated as well that development of a four-lane truck lane facility along SR-60 would lower the need for mixed-use lanes on other highways in the region from between one- to three-lanes<sup>44</sup>.



Image 6, Elevated Highway Segment

Table 3  
Cost-Benefit Comparison of SR-60 Truck Lanes

Mode	# of miles	Cost (millions)	ROG Emission Reduction (tons)	Annual Hours of Delay Saved (millions)	Net Present Value mobility & air quality benefits (millions)	Value of \$1 Invested
SR-60 Truck Lane	35.1	\$ 1,840.0	1.91	57.1	\$ 10,900	\$ 5.95
SR-60 Mixed-Flow Lane	35.1	\$ 1,300.0	0.93	46.5	\$ 6,330	\$ 4.87
SR-60 Commuter Rail	42.8	\$ 111.6	0.32	0.32	\$ 124	\$ 1.11
Orange County Light Rail	28	\$ 1,700.0	0.25	0.21	\$ 1,904	\$ 1.12
Blue Line (Union Station -Pasadena)	13.6	\$ 1,100.0	0.25	0.22	\$ 1,232	\$ 1.12



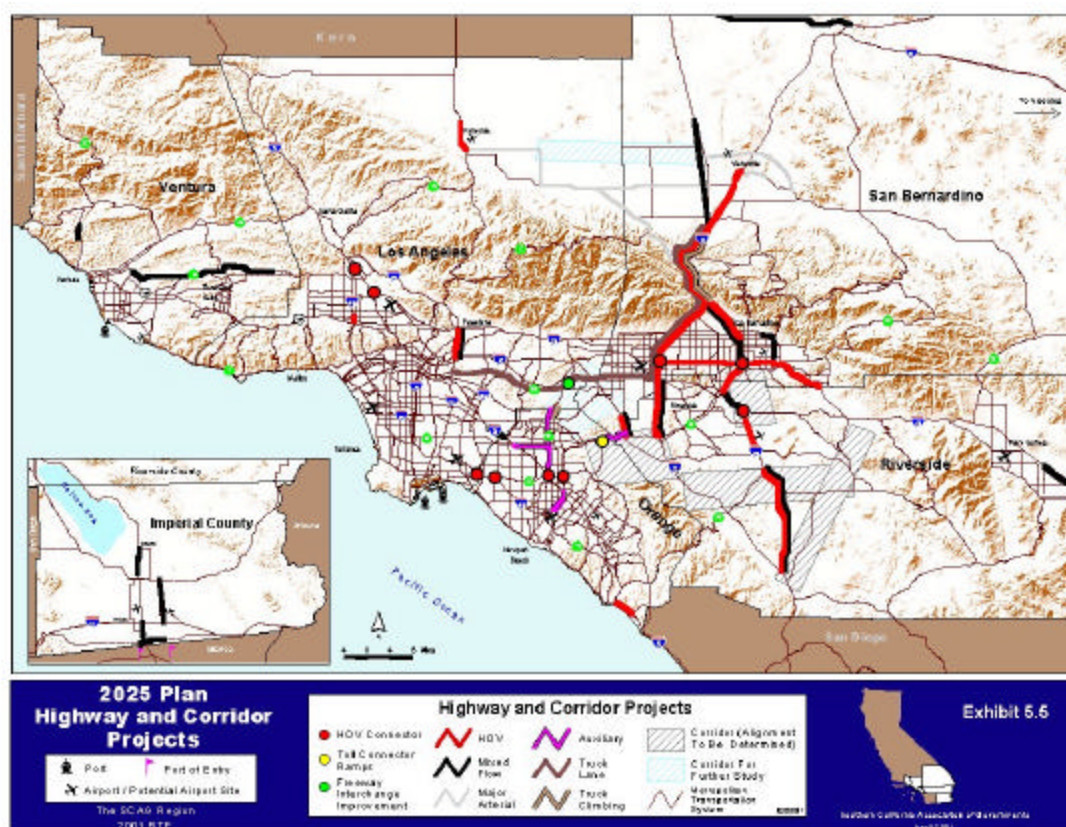


Figure 6, RTP Highway Improvement Projects

Truck climbing lanes have been included in the RTP for segments of SR-57 and I-15, and truck climbing lanes along portions of I-215, I-10, I-15, and I-5 have been programmed already for the present Regional Transportation Improvement Plan (RTIP). As a complement to the regional truck lane system, designated truck routes have been proposed at the periphery of the region to allow through trucks to bypass urban centers. A *Eastern Southern California Truck Bypass Corridor*<sup>45</sup> study has been completed, and the current OWP includes a *Coachella Valley Southeast Truck Bypass Study*<sup>46</sup>.

The RTP identifies \$3.626 billion of publicly funded, and \$1.622 of privately funded truck lane projects. To justify this level of investment, additional information is required to establish the value of truck lanes to both the general public and the trucking industry. SCAG is presently conducting a *Truck and Rail Study*<sup>47</sup> to determine the relative economic and operating characteristics of these alternative services. It appears that the market break-point of efficiency between these services occurs at roughly 800 miles of transport distance. Beyond this point the cost advantages of rail prevail, while at distances of less than 800 miles the versatility of trucking proves to be attractive. In addition to gaining an appreciation of the market-based elasticities that steer market choices between these competing modes, more needs to be known about what non-market values the general public would ascribe to the absence of large trucks from passenger lanes, with the greater safety and security the separation of these vehicles would entail.



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The Goods Movement Program is focusing efforts on studies and initiatives that work toward gathering support for, and furthering implementation of, the regional truck lane system. Studies are now underway that will enhance the reliability and utility of SCAG's HDT as an analytical tool in evaluating alternative truck lane configuration scenarios. The Truck and Rail Study will provide information helpful to mode choice, and a ***Truck Count Study***<sup>48</sup> will help to calibrate trip generation and distribution aspects of the HDT. The HDT was developed in 1999 as a component of SCAG's Regional Transportation Demand Model. Refinements envisioned for this model will assist in the development and presentation of arguments in favor of developing the region's truck lane system.

## **C. SCAG'S REGIONAL GOODS MOVEMENT PROGRAM**

The transportation facilities and distribution networks that work together to form Southern California's system of goods movement are owned and operated by an assortment of private firms and public agencies. As the designated Metropolitan Planning Organization (MPO) for the region, SCAG is charged with identifying, evaluating, and advancing transportation infrastructure developments and institutional arrangements that have the greatest potential to advance the regional goals of mitigating congestion, improving air quality, and enhancing safety and system security, all in an economically efficient way.

The primary means by which SCAG satisfies its legislated obligation is through production of a triennial Regional Transportation Plan (RTP). The RTP represents a compilation of the information and findings generated through studies and projects performed or directed by the agency through intervening years.

As the preceding survey of recent and ongoing studies related to the movement of goods suggests, additional efforts are required to further define and substantiate the need for goods movement facilities in the region, and in particular to devise innovative and additional mechanisms for funding freight-related capacity improvements. The need for greater funding sources is demonstrated with the shortfall of \$24.51 billion in public funding identified in the 2001 RTP.

For goods movement, identifying and securing the funding of ground access improvements to facilitate movements related to airports and marine ports; of dedicated truck lanes and truck climbing lanes to enhance overall regional mobility; of multi-modal transfer yards; and of grade separations and expanded railway capacities represents a primary objective. In total, the elements of the current year work plan are designed to further the general understanding of how the facilities and institutions that constitute the region's goods movement system operate, providing a solid factual foundation for investment and policy analysis.

### 2001-02 Operating Work Plan

Each year SCAG follows an Operating Work Plan (OWP) that details the scope and scale of studies and other project initiatives the organization will pursue to meet its statutory obligations. The Goods Movement Program aligns its activities with those of the SCAG organization as a whole, and schedules work plans for each year with the intent of furthering implementation of projects included in the current RTP. For the fiscal year 2001-02, the Goods Movement Program projects include the following:

1. Inland Port Priorities Study
2. Truck-Rail Study
3. Trans-Basin Train & Vehicle Mitigation Study
4. Regional Truck Count Study
5. Warehouse Logistics Study
6. Route I-710 Truck Trip Reduction Study

## *SCAG Goods Movement Program: White Paper*

Related studies being undertaken by other SCAG programs that involve the goods movement system include:

1. Regional Air Cargo Study
2. Ontario International Airport Ground Access Study
3. Eastern Southern California Truck Bypass Corridor
4. Coachella Valley Southeast Truck Bypass Study

Other agencies in the region are conducting studies that will add information about the region's goods movement system, including:

1. The LA-Inland Empire Main Line Study (LAEDC)
2. SCAG Region Goods Movement Case Study (LACMTA)
3. National I-10 Freight Corridor (Caltrans)

As a whole this set of studies being conducted throughout the region will contribute to the overall understanding of how the region's goods movement system performs and the level of contribution it makes to the region's lifestyle and economy. To review this system by its major components:

### *Nodes*

At the principal centers of freight collection and distribution—the marine ports and airports—operating authorities and private interests have developed facility and operating strategies to accommodate the forecast growth in cargo shipments. In relation to these growth plans, SCAG's Goods Movement Program is working to study ground access issues and to encourage discussions among facility operators regarding design and operational policies that best contribute to optimizing region-wide performance of the entire transportation system. Corridor improvements, including grade separations and dedicated freight access structures, work to minimize congestion and vehicle emissions in the vicinity of these operations. Advances in information technologies and progressive institutional practices similarly promise to increase system efficiencies.

As goods move away from the ports and airports, intermodal and distribution centers work to optimize the performance of the rail and road networks. The location and capacities of these facilities is of paramount importance to the efficient movement of goods in the region, and SCAG is working with local governments, transportation agencies, and private rail and trucking interests to develop additional information on these types of facilities. SCAG is initiating a Warehouse Logistics Study to generate much needed information on the functioning of these geographically dispersed freight centers. The information gained through this study will complement truck count studies in helping to calibrate and refine the Heavy Duty Truck model.

### *Modes*

SCAG's LA-Inland Empire Main Line Study has demonstrated the pressing need for both facility enhancements and operating realignments along the region's main railroad lines. Moving forward, the Goods Movement Program is working toward the acceptance of

regionally optimal solutions and to devise funding strategies to pay for the implementation of proposed improvements. A key aspect of this work is being developed in the Port Diversion Study, an effort designed to gauge the economic value of sustained and enhanced goods mobility in the region. This study will provide valuable insights to the elasticities of demand that relate to the competitiveness of the region's marine ports and to the relative economic efficiency of competing surface systems, rail and truck.

The main focus of SCAG efforts related to the regional network of highways and major arterial streets will be to advance the implementation of the truck climbing lanes and dedicated truck lanes. The implementation of these projects is progressing through the Truck and Rail Study and Port Diversion Study, which will work to frame operational and market issues relevant to the functioning of these proposed structures. Key in furthering these arguments will be the calibration and refinement of SCAG's HDT, along with the updating and distribution of a regional Truck Route Map.

#### 2002-04 Goods Movement Program Priorities

##### *Truck Lanes/Climbing Lanes/Heavy Duty Truck Model*

Findings from the 2001-02 work plan will provide updated truck count data and information of system performance that will be valuable in refining the SCAG's HDT. A key operational goal within the 2002-04 planning timeframe will be to draw on the HDT as an analytical tool for substantiating the requirements, and quantifying the benefits, associated with the implementation of dedicated truck lanes and truck climbing lanes. This model will be used as well to gauge the impact that various rail capacity and inter-modal facility options would have on regional air quality and highway performance.

##### *Truck Routes/Urban Bypass*

Updating and distributing a regional Truck Route Map will provide a valuable service to the region while contributing to enhanced mobility. Further development and coordination of various urban area truck bypass routes will similarly help to ease congestion on the region's highway network and provide a valuable resource to the private trucking industry.

##### *Rail Capacity*

Forecast volumes of container movements from the ports and out through the region would severely impede functioning of the region's main line rail network if significant capital improvement projects are not undertaken. In addition to the threat inaction poses to goods movement, regional passenger and commute rail activities are at jeopardy as well. Continuing evaluations of the benefit additional trackage and grade separations would have for the movement of goods in the region will provide a basis for innovative funding ideas and greater public/private partnering.

##### *Warehouse Logistics/Inland Ports*

Understanding the operating characteristics and trip generation attributes of the region's warehousing and distribution industry is essential to the effective modeling of the goods movement system and the analysis of alternative capital investment options. In particular the

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idea of an Inland Port deserves investigation to determine the impact such a facility would have on highway congestion and safety.

### *Air Cargo Ground Access*

Essential high growth and high value added industries depend on the rapid and reliable distribution of air cargo. Excessive surface congestion could easily negate the advantages of air cargo, forcing key economic entities out of the region. Studies of facilities and options providing greater and consistently reliable access to the region's air cargo centers will help to ensure that strategic economic interests can operate effectively in the region. Additionally, studies in this area will work to substantiate the economic and transportation system advantages of developing distributed air cargo facilities in the region.

### *Federal Transportation Legislation Re-authorization*

Previous efforts by SCAG to establish freight factors within the federal appropriations process have highlighted the urgent need for a dedicated source of funding for goods movement projects of regional and national significance. As discussions ensue in advance of reauthorization of the federal highway funding program in 2004, the Goods Movement Program is contributing to the development of a distributive formula for the equitable distribution of such future funds to goods movement projects. Known internally at SCAG as the National Economic Corridor Category Strategy (NECCS), this effort is seeking to identify factors that will assist California in recapturing a substantial portion to the economic benefit that the contributes to the nation through its investment in, and operation of, the goods movement system in Southern California.

Growing awareness that the funding levels required to sustain regional mobility, along with the economic benefits contributed to the nations economy, far exceed the region's available resources.

Factors comprising this new formula will emphasize attributes of the goods movement system that are particular to the SCAG region and that recognize the economic benefits that accrue to the nation as a whole through the operation of these facilities. To identify mechanisms to secure new funding sources derived from those that realize the benefit of efficient goods movement facilities, ideas such as corridor movement fees on all vehicles passing through key corridors or an earmarked national sales tax on items transitioned through these facilities are being explored.

### *Institutional Practices*

In certain cases changes in institutional arrangements and practices have the potential to achieve increases in efficiency faster and to a greater extent than improvements in physical facilities. Operating hours, information sharing, equipment swaps and other technological advances could very well contribute to regional mobility in a most economical fashion. Several studies are programmed in the work plan to evaluate and substantiate this potential.

### *Outreach*

Another primary objective in the coming year will be to expand outreach activities to communities of interest. Opportunities will be sought to present study findings and project

development information to private and public associations concerned with the operations of trucking and intermodal facilities. It is envisioned that such outreach activities will encourage broad-based public- and private-sector participation in SCAG's Goods Movement Program by demonstrating the real-world relevance of the work being done.

In advance of the next RTP in 2004, the Goods Movement Program will undertake projects to promote the implementation of ground access, grade separation, intermodal yard, railway capacity, and truck lane projects as detailed in the active RTP.

#### 2004 Regional Transportation Plan

The studies and projects pursued by the Goods Movement Program over the next three years, in addition to furthering the implementation of projects listed in the current RTP, will be structured to complement production of the 2004 Regional Transportation Plan. This next plan has the following key milestones:

- 3<sup>rd</sup> Qtr 2002    Recommendations on goals, objectives, policies, growth visioning principles, performance criteria, process, methodology, assumptions, and initial alternative regional scenarios;
- 3<sup>rd</sup> Qtr 2003    Regional Council to approve Draft Plan and PEIR for release;
- 2<sup>nd</sup> Qtr 2004    Regional Council to adopt Final Plan and PEIR.

## SCAG Goods Movement Program: White Paper

- <sup>1</sup> All cargo types for San Pedro Bay ports, from San Pedro Bay Ports Long Term Forecast, Mercer, October 1998.
- <sup>2</sup> 2001 Regional Transportation Plan, SCAG, April 2001
- <sup>3</sup> The Port of Los Angeles website, November 2001.
- <sup>4</sup> POLA/POLB 2020 Master Plan, 1998
- <sup>5</sup> Alameda-East Corridor Plan, April 2001.
- <sup>6</sup> Port of Los Angeles Shipping Handbook 2000.
- <sup>7</sup> Port of Long Beach website, November 2001.
- <sup>8</sup> Ibid.
- <sup>9</sup> New Millennium Plan, Final Report, Oxnard Harbor District, Port of Hueneme, September 1999.
- <sup>10</sup> Alameda-East Corridor Plan
- <sup>11</sup> POLB/POLA Transportation Study Executive Summary, June 2001.
- <sup>12</sup> Port of Hueneme Access Study, VCTC and SCAG, December 2000.
- <sup>13</sup> POLB/POLA Transportation Study Executive Summary, June 2001.
- <sup>14</sup> SCAG, in progress
- <sup>15</sup> METTRANS, in progress
- <sup>16</sup> SCAG, in progress
- <sup>17</sup> LAX Master Plan 2001, LAWA August 2001.
- <sup>18</sup> SCAG, City of Ontario, and SANBAG, in progress
- <sup>19</sup> SCAG, in progress
- <sup>20</sup> POLB/POLA Transportation Study
- <sup>21</sup> WRCOG, in progress
- <sup>22</sup> SCAG, in progress
- <sup>23</sup> Heavy Duty Truck Model and VMT Estimation, SCAG, October 1999
- <sup>24</sup> Imperial County Arterial Plan, Freight Bottlenecks Study, and Cross Border Impacts Study, IVAG, May 2000.
- <sup>25</sup> Port of Los Angeles Shipping Handbook 2000.
- <sup>26</sup> FAA, in progress
- <sup>27</sup> Los Angeles-Inland Empire Trade Corridor Cost-Benefit Study, LAEDC, November 2001
- <sup>28</sup> ibid.
- <sup>29</sup> SCAG, in progress
- <sup>30</sup> San Pedro Bay Ports Access Study, SCAG, October 1984
- <sup>31</sup> Alameda Corridor – East Trade Corridor Plan, ACE Construction Authority/SANBAG/RCTC/OCTA/OnTrac, April 2001
- <sup>32</sup> Orangethorpe Corridor Grade Crossing Study: Final Report, SCAG/OCTA, June 1996
- <sup>33</sup> Alameda Corridor – East Trade Corridor Plan, ACE Construction Authority/SANBAG/RCTC/OCTA/OnTrac, April 2001
- <sup>34</sup> SCAG, in progress
- <sup>35</sup> SCAG, in progress
- <sup>36</sup> SCAG, in progress
- <sup>37</sup> The Southwest Passage, SCAG, July 1997
- <sup>38</sup> SCAG Regional Transportation Demand Model
- <sup>39</sup> 2002 estimates interpolated from the Heavy Duty Truck Model and VMT Estimation, SCAG, October 1999.
- <sup>40</sup> SR-60 Truck Lane Feasibility Study, SCAG, February 2001
- <sup>41</sup> I-5 Major Investment Study, LACMTA, July 1998
- <sup>42</sup> LACMTA, in progress
- <sup>43</sup> Caltrans/SCAG/SANBAG, pending
- <sup>44</sup>



<sup>45</sup> Eastern Southern California Truck Bypass Corridor Study, SCAG/CVAG, 2001

<sup>46</sup> SCAG/CVAG, in progress

<sup>47</sup> SCAG, in progress

<sup>48</sup> SCAG, in progress



## **GOODS MOVEMENT WHITE PAPER APPENDICES**

### **APPENDIX 1. FRAMEWORK FOR UNDERSTANDING REGIONAL GOODS MOVEMENT**

This appendix provides some guiding principles that are useful in understanding goods movement in general, and the southern California goods movement system:

#### **Modal elements:**

- Trucking includes a number of sub-modes and operational functions. For instance, truck trips may be line haul or local; truck freight may truck load or less than truck load (LTL); domestic containers on chassis are increasingly being used as a substitute for vans; and the industry itself is divided between motor freight carriers, contract and private carriers, and package express companies.
- Trucking is practically ubiquitous
- Rail freight is divided into carload traffic which includes bulk and breakbulk freight; and various kinds of intermodal traffic; intermodal includes conventional TOFC or trailer-on-flatcar, domestic containers on flatcars, “carless” road-railers, and domestic transload traffic, all with truck feeders; while there are major class I carriers like the Union Pacific and Burlington Northern-Santa Fe, regional railroads, and short lines
- Marine freight includes transpacific and coastal traffic; cargo may be bulk, “neobulk” or breakbulk, or containerized; the latter requires truck or rail intermodal links
- Air cargo includes package express, heavy lift, and other kinds; air cargo may also move by all-cargo planes or and passenger plane belly cargo; nearly all air cargo is intermodal, with trucks for the ground link

#### **Logistics:**

- The key to efficient goods movement is reducing delay; tracking shipments is extremely important; reducing empty backhauls, or finding some kind of cargo to put in backhaul movements, is helpful in increasing efficiency; providing a seamless system is a high priority today
- Third party logistics firms or freight providers and not transportation companies are often actually responsible for deciding how, when, and via what route freight is shipped; these firms include forwarders, consolidators (container/ truck trans-load), warehousing companies, customs brokers, etc.

#### **Infrastructure in place today:**

- Public facilities used by trucks include most freeways and arterials, and many local streets--especially in commercial and industrial areas; including the 5, 210, 55, 57, 91, 60, 710, 15, 215, 10, and other freeways, truck climbing lanes and auxiliary lanes
- Additional public and private facilities used by trucks include truck stops, rest areas, fueling stations, weigh stations, and truck/trailer storage areas

- Railroads are primarily privately-owned facilities and include main lines (transcontinental and regional), branch lines, class yards and intermodal yards, and maintenance facilities
- Seaports in this region are port authority-owned and public terminal operated; port terminals include container, bulk, auto, and other breakbulk terminals; the shipping lanes under public jurisdiction
- Airports are publicly-owned as is the air traffic control system and ground access; private facilities include air cargo terminals and maintenance facilities
- 3<sup>rd</sup> party logistics firms are privately owned

Goods movement issues in general include:

- congestion
- access
- system capacity for transport and storage
- pollution (air, noise)
- supply of truck drivers and vitality of the drayage “industry”
- lack of funding for new facilities
- private carrier equipment needs
- limitation/prohibition of public funding for railroad infrastructure

Who is involved in goods movement planning and development in this region:

- SCAG, subregions, counties, and cities
- the state DOT (Caltrans)
- the federal government (FHWA, STB, FRA, FAA, etc.)
- law enforcement agencies
- customs
- railroads, trucking industry, shipping lines, air passenger and cargo carriers
- port and airport authorities
- labor unions
- air quality management agencies

Who is doing studies on goods movement in this region:

- SCAG staff and consultants, Goods Movement Advisory Committee
- subregional staff and consultants
- county transportation commissions, staff and consultants
- city traffic and planning departments; Los Angeles DOT
- Ports and airports’
- California Department of Transportation
- AQMD and CARB relating to air quality issues
- Private corporations

**The following also need to be considered in understanding the complexity of goods movement:**

- Cargo is differentiated by distance, speed and priority of shipment, reliability, “packaging” (containerized, bulk or loose, etc.), and value
- Geographical origins and destinations have to be considered: domestic (local, other California, nearby states, other areas of the country), other North America, Pacific Rim overseas, Europe, etc.
- Logistics function is important: local, line haul, transfer, storage, consolidation of freight, etc.
- There may be logistics alternatives which can reduce the need for facility construction, relating to time of shipment, etc.
- Obtaining adequate data on goods movement, by commodity, distance, mode and type of shipment, etc. is essential if we are to be able to predict future needs—forecasting is difficult enough as it is even with a good data base.

Further, combinations of geography, shipment urgency, type of commodity, etc. result in the following common kinds of combinations (greatly simplified):

- Marine packaged freight
  - Asia to SCAG region or hinterlands (e.g. Arizona)
    - ... water to truck in the same marine container
    - ... water to truck trans-loaded from marine container to highway trailer
  - Asia to Middle West/East Coast—water to rail in the same marine container
    - ... loaded on dock for major destinations
    - ... loaded near dock for minor destinations
  - Asia to Middle West/East Coast, water to truck (trans-load facility) thence by highway trailer or domestic container to rail yard, and train from there
- Marine bulk freight
  - Inland US to Asia by train and ship
- Domestic packaged freight, surface
  - Short distance: delivery truck, often LTL freight
  - Medium distance: truck load or LTL freight
  - Long distance: truck load to rail intermodal
- Domestic bulk freight, surface
  - Short distance, truckload
  - Medium to long distance, rail carload or unit train
- Highest priority freight, air
  - International or domestic, LTL freight or container, to plane
  - Lower priority domestic “air” cargo may move entirely by truck

## **APPENDIX 2: LIST OF REGIONAL GOODS MOVEMENT STUDIES**

A considerable number of goods movement studies have already been completed, and others are underway by SCAG and other agencies or have been included in SCAG’s Overall Work Program. A list of major regional goods movement studies is provided below, along with an indication of which facilities are already in operation:

**a) Trucking** is an essential component of the goods movement system, since, with the exception of some liquid bulk commodities that can move in pipelines, virtually every commodity will be, at some point on its trip, moved by truck. Trucking is used for line-haul freight, local delivery and package express, and for access to rail, marine, and air shipments.

Special trucking facilities which are in operation include:

- Truck climbing lanes and auxiliary lanes along I-5 at the north end of the San Fernando Valley

Trucking studies/studies with major truck components completed thus far include:

- The SR-60 Truck Lane Feasibility Study
- The I-5 Major Investment Study
- Alternative truck bypass routes have been investigated for the high desert area
- The Eastern Southern California Truck Bypass Corridor
- San Gabriel Valley Trucking Study
- SANBAG Inland Corridor Study
- Other studies by Gateway Cities, WRCOG, OCTA, VCTC, and LADOT
- The Regional Truck Model
- Caltrans' Statewide Truck Count Study
- Caltrans' truck count book (by year, also on-going)

Trucking studies/studies with major trucking components currently under way include:

- The I-710 Corridor Study
- The I-15 Comprehensive Study
- The Regional Truck Count Study

Trucking studies which have been funded include:

- A Coachella Valley Southeast Truck Bypass Study
- A North LA County Truck Impact and Facility Needs Study
- A City of Los Angeles Freight Movement Study
- Hollywood/Westside/LAX Goods Movement Improvement Program
- WRCOG study of goods movement highway impacts
- Joint SANBAG/WRCOG goods movement study
- A Project Study Report on SR-60 is under discussion

Truck projects programmed in the RTIP include:

- Truck climbing lanes along I-215, I-10, I-15, and I-5
- A number of arterial highway projects that will benefit trucking

Truck projects included in the 2001 RTP include:

- The SR-60 and I-15 truck lanes as adopted projects
- I-15 and SR-57 truck climbing lanes
- Additional projects in the Arterial Highways section of the 2001 RTP

- b) **International Border Crossing Access** primarily relates to truck access on regional arterials and freeways. With rapid growth of north-south international trade under NAFTA, and growth of maquiladoras along the US-Mexico border, improvements to the international border crossings in Imperial County are essential.

Recent international border crossing studies:

- The Imperial County Transportation Plan includes improvements to I-8, SR-7, SR-78, SR-86, and SR-111 relating to access to the Calexico East Port of Entry.

- c) **Seaport Development** of the San Pedro Bay Ports of Los Angeles and Long Beach, and of the Port of Hueneme. Both seaport (terminal) capacity and landside access improvements will be necessary to accommodate the future growth of Pacific Rim trade, especially of containerized goods.

Seaport facilities added

- A major program of facility relocation to new landfill at Port of LA
- Major redevelopment of old piers to accommodate new container terminals at Port of Long Beach
- Recent expansion of Port of Hueneme facilities

Seaport facilities under construction include:

- Continuation of the above activities
- Alameda Street arterial grade separations in parallel with the rail access improvements

Seaport studies completed

- 2020 Plan
- Ports' Transportation Master Plan
- Port Hueneme Access Study
- San Pedro Bay Ports Access Study Phase 1. Truck Study
- Agile Port Project
- Potential Terminal Island Freeway-San Diego Freeway Connector Study

Seaport studies in progress:

- Empty Container Study

Seaport studies funded:

- A revision of port commodity forecasts to be developed presently

#### **d) Railroads**

The **railroads** carry a variety of domestic and international (mainly marine) cargo, including conventional carload freight, unit trains of bulk commodities, and intermodal freight (e.g. marine containers on well cars, highway trailers on flatcars). Shipment distance is on the average much longer than for truck freight, and very few rail shipments are short-distance or solely within the region.

Railroad facilities placed in operation over the last several decades:

- Intermodal Container Transfer Facility
- On-dock rail yards at Ports of Long Beach and Los Angeles
- Intermodal facilities at City of Industry including Roadrailer facility
- Transload facility at Valla Yard
- San Bernardino intermodal yard
- Auto loading facilities at Mira Loma and San Bernardino
- Track additions shared with Metrolink on UP and BNSF main lines

Railroad facilities under development

- Alameda Corridor

Railroad studies completed

- San Pedro Bay Ports Access Study, Phase 2. Railroad Access
- Regional Railroad Consolidation Study
- joint RCTC/ATSF study
- AB 2928 study
- studies by San Pedro Bay Ports
- California DOT 201 California Freight Rail Plan
- SANBAG Inland Goods Movement Study
- Alameda Corridor East Study
- Orangethorpe Corridor Study
- Gateway Cities rail study
- WRCOG At-Grade Rail Crossing Analysis

Railroad studies underway

- Truck and Rail Study
- Los Angeles-Inland Empire Main Line Rail Study
- Inland Port Study
- Trans-Basin Train and Vehicle Mitigation Study
- South Bay Rail Study
- Placentia trench study

Railroad studies funded

- Trans-Basin Train and Vehicle Mitigation Study

#### **e) National Trade Corridors**

Several proposed national trade corridors would link southern California and its port and industrial facilities with the Gulf Coast and the Middle West, including **the Southwest Passage** and the I-40 Corridor. These corridors encompass all modes, but the focus would be on highways and railroads, and linkage to the seaports; and in the case of the Southwest Passage, international border crossings and related commercial and industrial development would be key.

Studies underway

- Continuing work on the Southwest Compact

#### **f) Air cargo**

Air cargo is typically high-valued, usually light-weight, priority freight.

Studies completed

- SCAG studies on military air base conversion, March AFB, etc.

Studies underway

- LAX Master Plan
- SCAG Air Cargo study

#### **g) General goods movement planning issues**

Studies completed

- Goods movement matrix of issues, problems, and potential solutions; developed by GMAC with staff assistance, in 2001 RTP Appendix

Studies in progress

- Staff survey of GMAC on how to improve private sector participation

#### **h) Goods movement data collection and forecasting ability**

This category pertains to data collection relating to commodities transported by various goods movement modes, rather than truck counts.

Studies completed

- Inter-regional Goods Movement Study
- Ports' Transportation Master Plan

Studies underway

- Truck and Rail Study
- LA-Inland Empire Main Line Study

Studies funded

- Studies of international and domestic trade forecasts in SCAG 01-02 OWP
- RFP has been let on study of discretionary flows of marine cargo versus captive cargo, and impact of port charges on the discretionary cargo

#### **i) Other freight logistics studies**

This category includes studies of third-party logistics firms, who do not transport freight but are instrumental in processing, consolidating, and storing freight.

Studies funded

- Warehouse logistics study

#### **j) Funding and financing for freight projects**

This deals with the potential for increasing federal allocations for regions, like southern California, which function as gateways for international trade for the rest of the country; and with the potential for developing pots of money for goods movement projects at the national level.

Studies completed

- The initial SCAG regional freight factors study
- GMAC study of freight factors (included in the 2001 RTP Appendix)
- Performance Measures of Goods Movement in California, Cal State Long Beach and Metrans
- Implementing a Statewide Goods Movement Strategy, Cal State Long Beach and Metrans

Studies underway

- Study of freight factors and TEA-21 reauthorization

### **APPENDIX 3: MOST NOTABLE REGIONAL GOODS MOVEMENT SUCCESSES**

Among the notable successes in goods movement development in terms of actually facilities in operation are:

- a major development of new container terminals at the Ports of Los Angeles and Long Beach, including some terminals on new landfill—projects sponsored by the two San Pedro Bay Ports
- the development of the Intermodal Container Transfer Facility in Carson, where marine containers are transferred from short-haul drayage trucks to trains (a joint facility by the former Southern Pacific Transportation Company and the Ports of Los Angeles and Long Beach)
- several new on-dock container loading facilities for ship to train transfer at the Ports of Los Angeles and Long Beach (projects by the San Pedro Bay ports)
- development of new bulk loading facilities in the San Pedro Bay Ports
- development of new railroad intermodal yards from the old railroad class yards in downtown Los Angeles – Hobart on the BNSF, and East LA Yard on the Union Pacific
- new inland domestic intermodal transfer facilities—in San Bernardino on the BNSF, and at Industry on the Union Pacific



- Major new auto loading facilities at the Port of Hueneme, a joint project with the Seabee base, and involving both truck and rail transport
- [Cite new air cargo facilities at LAX, Ontario, Norton AFB]

But the most famous new goods movement project in the region is, of course, the Alameda Corridor, a 20 mile plus grade-separated rail freight corridor extending from the San Pedro Bay ports and the transcontinental rail lines, which will double train speeds and eliminate vehicular delay for streets crossing the former SP San Pedro Branch. This includes a major depressed trainway section and other grade separations, and major improvements from the ports north to the 91 Freeway along Alameda Street itself, benefiting container and other truck movements. Although the Alameda Corridor will not open until next year (2002), it is known nationally as an outstanding example of a public-private partnership, and is being imitated elsewhere on a smaller scale (e.g. in Seattle-Tacoma).

Note: It may be argued that one of the most successful aspects of the expansive freeway system in southern California, which has so often been seen as a very mixed blessing (especially by environmentalists, transit advocates, etc.) is that it does provide for effective goods movement by truck, albeit on many freeways this effectiveness is seen primarily at night (for through trucking) and during off-peak hours (for local deliveries). Note that even in Europe, where there is extensive urban rail transit--heavily used by the public, there is very little urban goods movement on this system, and trucking prevails for freight transport. This is an argument in favor of having a grade-separated highway system, as an enhancement to freight movement, and, in the future, for finding more effective ways to use this highway system in future expansion, through implementing reserved truck lanes.

#### **APPENDIX 4: SUMMARY OF OUTSTANDING GOODS MOVEMENT ISSUES AND RESEARCH NEEDS**

The following outlines what has been done thus far relative to completion of the studies that have already been funded, and suggests the addition of further studies that are highly desirable in order to develop a viable goods movement program and to assist in implementation of RTP projects. These studies and proposed projects are numbered and organized by mode and function. More detailed descriptions of this information are included in the following Appendix to this White Paper, with same numbers applied to each issue.

##### *Trucking*

Issue 1: Congestion on the freeway system is one of the most critical issues facing the trucking industry. A major issue is whether a system of grade-separated truck lanes should be constructed along I-710, SR-60, I-15, and I-5, the argument being that this will ensure that domestic and international cargo can move speedily, economically, reliably, and safely over the freeways. The routes recommended would conduct trucks from the ports to industrial areas near downtown LA and in the Inland Empire, thence to the eastern U.S; and link northern California with LA and Orange Counties.

Issue 2: Related to this is the completion of a system of truck climbing lanes on freeways with steep gradients, largely on the approaches to the urbanized area, for reasons of safe

and efficient operation of both trucks and automobiles. The projects included in the 2001 RTP will be complementary to a system of reserved urban truck lanes.

Issue 3: The third truck issue relates to feasibility and desirability of improving truck bypass routes along major arterials that can allow through trucks to avoid driving through the urbanized area, and do so in a safe and efficient manner. Such truck bypass routes have been proposed for both the high desert and for the Coachella Valley and further work is needed, especially for the high desert corridor.

Issue 4: There are many areas in the region where arterial highway capacity, intersection design, parking, ramp and intersection geometrics, signaling, and lack of adequate loading docks interfere with efficient and safe truck movement after the trucks have left the freeway system, and try to gain access to shippers, receivers, and warehouses. A number of studies by the subregions and cities have already looked into this issue, with additional studies about to get underway; this is an area in which considerably more work will be needed.

Issue 5: Truck routes and truck prohibitions are poorly understood in the region. It has been proposed to correct and update the 1989 SCAG truck route map, to provide truckers, dispatchers, planners and other interested parties with an up-to-date truck route map.

Issue 6: Although we have a Regional Truck Model, and a considerable amount of data on truck volumes are available from Caltrans and subregional studies, there is a need for additional truck volume data. For this reason a Regional Truck Count Study is presently underway to supplement existing information. The issue of obtaining adequate freeway truck count data, representing different seasons and over successive years, remains and further truck counts are highly desirable.

Issue 7: Composition of regional truck traffic is poorly understood. Since it is proposed to initiate the truck lane system with lanes on SR-60, it would be very useful to do a video identification study of trucks on this freeway, to clarify what percentage of marine container trucks are using it and what other kinds of trucks use the 60. This will help identify who should help fund the project.

Issue 8: The economic value of the proposed truck lanes to truckers is not well understood. It would be desirable to conduct a study of the benefit of the truck lanes to truckers and other elements of the manufacturing, warehousing, and goods movement industries.

Issue 9: As it has been proposed to assess a toll or special use fee on truckers using the truck lane system, a necessary study would be to assess the propensity of truckers in other parts of the country to pay tolls to operate on superior routes and roadways, avoid congestion, etc., and to shed light on differential toll needs by time of day.

Issue 10: Facility size required for a truck lane system needs to be confirmed: further work is needed to confirm how many lanes per direction are needed, in what locations,

including taking into account seasonal variations in truck volumes. Although this may be included in the PSR work on SR-60 it is cited here as a special need.

Issue 11: To better determine truck origin-destination movements, it would be very useful to use video identification to track the movements of trucks along a representative freeway such as I-710 both along freeway segments and onto contiguous arterials. This would provide better information on marine transload activity which is part of the explanation for why the composition of trucks at the south end of the 710 changes to a heavily domestic trailer composition towards the north end.

Issue 12: There is a need to understand where major truck bottlenecks occur, including arterial segments and intersections. This would entail a detailed evaluation of the results of subregional and city studies, and probably additional investigations.

#### *International Border Crossing Access Issues*

Issue 13: Further evaluation leading towards implementation of improved arterial highway routes used by trucks to serve the Calexico East Port of Entry is essential.

#### *Seaport development and roadway access issues*

Issue 14: Seaport capacity improvements for containerized, bulk, and neobulk freight are being actively pursued by the major Ports of Los Angeles and Long Beach, including new landfill, recycling of older facilities, new container and bulk terminals, and dredging to accommodate deeper draft vessels. These improvement programs and associated planning efforts will continue over the foreseeable future.

Issue 15: Facility improvements at our regional niche port, Port of Hueneme, will continue.

Issue 16: Capacity of the San Pedro Bay Ports to accommodate increased truck traffic. The Ports of Los Angeles and Long Beach have moved aggressively to improve arterials, local port area roadways, and intersections. This activity will continue per recommendations of the Master Plan. A major, on-going problem at these ports is the impact of restricted terminal hours of operation.

Issue 17: Congestion related to truck access to Port of Hueneme. Improvements have been detailed in the Access Study.

Issue 18: Near-dock highway access to San Pedro Bay Ports; this relates to arterial access to the ports and use of a rebuilt and grade separated Alameda Street south of SR-91 as a freeway alternative.

Issue 19: Movement of empty containers on regional freeways and in the San Pedro Bay port area. Further work on reduction of empty container movements and reduction of empty trip miles will focus in internet matching services, resolving institutional obstacles to sharing containers between shipping lines, and development of near-dock/inland container transfer facilities.

To add: seaport security issues

### *Railroads*

Issue 20: North-south train movements from the Ports to downtown LA, which are being addressed by the Alameda Corridor. The primarily remaining issues related to the Alameda Corridor, which is fully funded and set to open in 2002, relate to operations and capacity in the out-years.

Issue 21: Railroad east-west main line capacity and throughput. Future work will focus on providing the infrastructure needed for reliable service on the main lines, on ways to separate passenger and freight service, on adding capacity to lines leading outside of the basin, e.g. through the Cajon Pass, and on developing innovative financing methods for funding railroad infrastructure.

Issue 22: Railroad-railroad grade separations. Future planning is needed on the best configuration for Colton Crossing, where railroad main lines and Metrolink lines cross; there may be a future issue relating to separating passenger and freight service at Pomona.

Issue 23: Railroad intermodal terminals. Future planning work is needed to provide new railroad intermodal facilities in the Inland Empire (at least two facilities), a new near-dock intermodal facility, and possibly others.

Issue 24: Capacity to store trains bound for/leaving the San Pedro Bay Ports. Future work probably needs to be done to provide adequate storage for container trains to and from the ports.

Issue 25: Inland seaports. Further study is needed on the feasibility/desirability/function of inland intermodal terminals to handle international marine containers at sites remote from the San Pedro Bay Ports. Possible inland port concepts include shuttle trains for local containers, transfer of containers from short-haul to line-haul transcontinental trains, a location to build and split trains, store empty containers, or handle domestic loads in back-hauled marine containers.

Issue 26: Other railroad logistic concepts, including carless rail intermodal and domestic transload cargo.

Issue 27: Future use of railroad branch lines. This issue includes expansion of passenger use of branch lines, while maintaining local carload freight, as opposed to abandonment and loss of the railroad service coverage for shippers needing railcar delivery.

Issue 28: Railroad-highway grade crossings. This is probably the issue requiring the highest level of funding in future decades; and includes development of phased implementation plans for grade crossing improvements, including grade separations, road

widening, crossing closure, safety improvements for crossings that will not be closed, and ITS and other innovative grade crossing improvement measures.

#### *National trade corridors*

Issue 29: Southwest Passage development potential. Development of this multi-modal, multi-state transportation corridor would facilitate rail intermodal and highway freight transport, facilitate cross-border trade, promote economic development, and perhaps facilitate a creation of a new land-bridge between the Pacific Rim, the southeastern US, the Caribbean, South America, and Africa.

#### *Air Cargo*

Issue 30. How to accommodate growth in air cargo demand. This includes expansion of air cargo facilities, on former military air bases and other airports in the Inland Empire and on the periphery of the region

Issue 31. Airport ground access for air cargo, including adequate freeway/arterial lane capacity, better intersection design, etc.

Issue 32. Air cargo and security; a new issue in the aftermath of 9-11.

#### *General goods movement planning issues*

Issue 33. Goods movement problem identification. The basic matrix of goods movement issues, problems, and potential solutions has been completed; however its use in developing further goods movement study projects needs to be considered.

Issue 34. How to improve private sector participation. Per a recent staff survey of the Goods Movement Advisory Committee the suggestion is that staff outreach to the private sector and developing lists of industry contacts will be key. This needs further elaboration and development of a staffing plan.

#### *Data collection and forecasting*

Issue 35. Better information needed on freight tonnage, volumes, and value for goods originating from/destined for/passing through the region; especially for domestic cargo and transloaded cargo.

Issue 36. Methodologies for international and domestic trade forecasts, mode splits, and cost elasticities are needed.

Issue 37. The impact of charges on international cargo on port diversion is not known; a study is about to begin to investigate discretionary flows of cargo versus cargo captive to the region, and the impacts of fees on the former.

Issue 38. An evaluation is needed of ways to guarantee shipper and carrier confidentiality in gathering freight data.

### *Other logistics studies*

Issue 39. An assessment is needed of regional warehousing and other third-party logistics companies, including their location and functions; including warehousing, forwarders, consolidators, trans-loading operations, customs brokers, etc.; an aspect of this is the potential for expanding night operations.

### *Finance*

Issue 40: Development of freight factors for increasing funding for regional goods movement projects, towards TEA-21 reauthorization; including potential to create separate funds for goods movement projects at the federal level.

## **APPENDIX 5: DETAILED ACCOUNT OF GOODS MOVEMENT ISSUES**

The following is a detailed discussion of goods movement issues by mode and function. The numbers given to issues in the Appendix matches what has been included in the White Paper text.

### **TRUCKING ISSUES**

#### **Issue 1: Freeway congestion slowing operation of commercial trucks**

Heavy recurrent congestion on major regional freeways results in slow and inefficient movement of commercial and other trucks, especially during AM and PM peak periods, a situation which will become increasingly worse as heavy duty truck volumes increase by over 60% through 2025. In addition, interweaving movements of cars and trucks on the same freeways results in unsafe conditions and incident-related congestion during other periods of the day. These conditions result in increased auto and truck emissions, higher cost trucking operations and higher costs for goods, delays in shipments and increased vehicle and other property damage.

#### *Potential solutions:*

A potential solution is to create a system of fully grade-separated truck lanes, parallel to existing freeway lanes, with their own drop ramps to intersection arterials. A number of configurations are possible, including elevated and surface (freeway level) truck lanes, either over the median or along the side of a freeway, or on a separate, parallel right-of-way (R/W). It is believed that a minimum of two truck lanes per direction would be required, with adequate shoulders to pull over a disabled vehicle. It is proposed to use tolls to cover up to 40% of the cost of constructing such lanes.

A system approach is desirable serving LA, Orange, Riverside, and San Bernardino Counties. The strategy is to link the San Pedro Bay Ports with major rail intermodal yards and industrial areas Near downtown LA, via the I-710 corridor; extend the lanes east to the Inland Empire providing linkage to Ontario Airport and major industrial and warehousing areas along the SR-60 Corridor; and to continue north through the Cajon Pass along I-15 to provide linkage to I-40 and other major interstate highways connecting the region with other parts of the country. This set of truck lanes would be extend north

and east from the ports. Intersecting this would be truck lanes along I-5 from Orange County to North LA County, oriented northwest to southeast and handling major truck flows to/from northern California.

Relevant studies:

The SR-60 Truck Lane Feasibility Study, sponsored by SCAG and completed in November 2000, evaluated the technical and financial feasibility of the first leg of this truck lane system, extending along the Pomona Freeway from downtown LA to a point east of Ontario. The I-710 Corridor Study, managed by LACMTA, and I-15 Comprehensive Study, managed by Caltrans district 8, are in progress. Both include truck lane components. Truck lanes were discussed as an alternative in the I-5 Major Investment Study by LACMTA. Finally, a Project Study Report (PSR) has recently been funded for the SR-60 truck lane project to continue development of this project.

Recommendation:

In addition to the PSR, several additional studies are desirable relating to SR-60 truck lane implementation potential, including an evaluation on the propensity of truckers to use toll roads in other parts of the country and an evaluation of economic benefits to the trucking industry of truck lane use. It is further recommended that total forecast truck demand, cost, and financing potential for the ports-to-Cajon Pass component of the system (I-710/SR-60/I-5) be evaluated when studies of these three major segments of the truck lane system have been completed to the same level of detail.

Implementation:

Thus far, only the SR-60 and I-15 truck lane segments have been included in the 2001 RTP for implementation.

Timing:

The SR-60 being considered for **intermediate-term implementation** (2010) and the remaining truck lanes for **long-term implementation** (2020 or later).

**Issue 2: Speed differential between trucks and auto traffic on hilly sections of freeways**

Steep gradients on certain freeways result in serious speed differential between trucks and autos, reducing capacity for both and increasing potential for incidents/accidents and increasing emissions. On uphill sections, loaded trucks are often unable to attain the same speeds that autos and other light vehicles can; while on downhill sections, trucks may have to drive considerably slower to be certain of stopping in the event of brake problems.

Potential solutions:

On uphill sections, a single truck climbing lane is often located on the outside of a freeway, sometimes with pull-over areas for trucks to park temporarily. On downhill sections, a truck lane may also be placed on the outside of the freeway, and/or runaway truck ramps may be provided. Auxiliary lanes on separate roadways that trucks are

required to use may also be provided in hilly sections, e.g. the double truck climbing lanes in both directions that are already in operation along I-5 at the north end of the San Fernando Valley (which are contiguous with truck auxiliary lanes south of SR-14).

Relevant studies:

Project study reports should be available for all truck climbing lane projects. Truck climbing lanes have been programmed in the RTIP for I-215 near UC Riverside and Box Springs, for I-10 in the Yucaipa area, for I-15 in parts of the Cajon Pass, near Barstow, and as an extension of the I-5 truck climbing lanes in the Santa Clarita area.

Recommendation:

An SR-57 truck climbing lane has been included in the 2001 RTP, as have truck climbing lanes on I-5 in the Cajon Pass above Devore (north of the proposed toll truck lanes). It is that other locations may require truck climbing lanes, including extensions of lanes already operating, programmed, or planned, and possible addition of downhill lanes where only uphill climbing lanes are now planned.

Timing:

The I-15 and SR-57 truck climbing lanes included in the Plan are slated for 2010 implementation and hence are for intermediate-term implementation.

**Issue 3: Need for truck bypass routes around the urbanized area**

Inadequacy of arterial truck routes in high and low desert areas results in slowing of commerce, local congestion and accidents, higher costs for goods movement, and some diversion of through trucks to urbanized area routes, resulting in increased congestion and accidents on regional freeways. It is understood that a high desert bypass route is desired, but that there is no consensus between jurisdictions over which alignment should be followed.

Potential solution:



Designated truck routes that allow through trucks to bypass urbanized areas require adequate capacity (at least two lanes per direction), adequate intersection design (signaling, turn lanes, turning radii sufficient for big trucks, possible grade separations at intersections with other major routes), adequate sight lines and lane markings where trucks may overtake and pass other vehicles, shoulders sufficient for trucks to pull over and stop, and adequate rest areas and service areas. Truck bypass routes are needed across the low desert through the Coachella Valley and on an agreed-upon route across the high desert connecting I-40 with SR-14.

*Relevant studies:*

Studies have been conducted recently on new truck bypass routes and added lanes on heavily used truck routes in these more rural areas, including the Eastern Southern California Truck Bypass Corridor, which would run through Riverside and San Bernardino Counties to meet I-40 at Ludlow. The 01-02 SCAG OWP includes a Coachella Valley Southeast Truck Bypass Study in the arterial section, to continue this work.

*Recommendation:*

Implement the low desert corridor projects, achieve a consensus over a preferred high desert corridor route, and proceed with PSR.

*Timing:*

For short or intermediate term implementation in light of numerous complaints over accidents and congestion on current routes used by trucks.

**Issue 4: Inadequate capacity, intersection design, and geometrics for trucks along arterials in the urbanized area.**

Lack of capacity, especially at intersections impedes, impedes efficient movement/operation of trucks on regional arterials in urbanized areas in the six-county SCAG region. This includes inadequate turn lanes and turning radii for truck movements, inadequate traffic signalization, and in some cases narrow streets that must be used by trucks. In addition, there are problems such as lack of truck parking areas where customers must be served or where trucks have to lay over, scarcity of truck loading docks, and numerous other impediments to efficient truck operation. This results in higher costs, higher emissions, increased congestion, higher accident rates, and undependable service to customers. Further, truck routes and truck prohibited routes are often not well marked or indicated and signing and other information systems are often inadequate.

*Solutions:*

Provide mixed flow lanes and some truck only lanes where trucks need them; improve intersections where trucks are prevalent, including sight lines, turn lanes, and traffic lights; provide adequate horizontal and vertical clearances to accommodate trucks, and better road geometrics where trucks have to maneuver; improve pavement conditions and rehabilitate worn roadways where trucks are a high percent of traffic; improve visibility

and signing in general and install signs high enough so that auto drivers can see the signs over the tops of truck trailers; furnish adequate truck queuing, staging, and parking areas; implement ITS solutions where feasible.

*Recent and on-going studies:*

There have been a number of Subregional, County, and City projects to improve truck operations and make trucks more compatible with the areas they drive through, and with other motor vehicles. Many of these studies have been funded by SCAG, but others have been funded by County Transportation Commissions and local cities. Studies include the San Gabriel Valley Trucking Study; the Sanbag Inland Corridor Study; other studies by Gateway Cities, WRCOG, OCTA, and LADOT.

A North LA County Truck Impact and Facility Needs Study is soon to; and the SCAG 01-02 OWP includes a Hollywood/ Westside /LAX Goods Movement Improvement Program to evaluate truck issues, under arterial planning; a City of Los Angeles Freight Movement Study; and a WRCOG study of goods movement highway impacts, also under Arterial Planning. A number of arterial highway recommendations that will improve trucking are already slated for implementation in the RTIP and others are included in the RTP.

There is a related problem, however, of identifying which of the arterial and street improvements will specifically benefit goods movement and other trucking, as many projects are not labeled as having truck operational benefits.

*Implementation:*

On-going and future; there is a need to assess which projects will particularly benefit goods movement.

*Timing:*

This category doubtless includes a large number of potential projects for implementation, some of which may be short term.

**Issue 5: Truck routes and prohibitions are not fully understood.**

Lack of a reliable and up-to-date truck route map for the region makes goods movement planning difficult, and impedes private-sector planning of industrial and warehousing improvements.

*Solution:*

An accurate truck route map should be developed, that would indicate by city and county, designated truck routes for various classes of trucks; where trucks are prohibited; and other information useful to truckers. This map could be made available not only in hard copy form but also over the internet to interested parties, including truckers who would access route information in this way at truck stops or via a monitor in the cab of the truck.

*Studies:*

SCAG developed a 1989 truck route map; this was recently translated into GIS and GMAC is interested in reviewing, revising and updating it.

*Recommendation:*

Update the existing truck route map and make it available in hard copy as a large fold-out map, a small map booklet, and electronically for internet users.

*Timing:*

This should be an immediate-term activity, so that the map would be completed in 2002 and labeled as such.

**Issue 6: Lack of good data on truck volumes, origins and destinations**

It is widely recognized that better truck volume data is needed for regional freeways and major arterials, and that we need to get a better idea of truck origins and destinations for trucks carrying different commodities.

*Solution:*

Further truck counts are needed to supplement data collected as part of the development of the Regional Truck Model, including cordon line counts, screen line counts, and driveway surveys at major truck trip generators. These counts should be done for the winter/spring period, after the holidays, and for the summer-fall period leading up to Thanksgiving and Christmas, when retail stores are stocking up for major sales. Additional peaks in truck activity may be identified relating to agricultural growing and harvest periods, in certain parts of the region. Counts are needed for multi-year periods, to account for variations from one year to another.

To supplement volume data, driver, truck company, and shipper interviews are needed to provide additional information on frequencies of truck movement, commodities shipped, and routes. These surveys could include intercept surveys and surveys of drivers at truck stops, phone or in-person interviews with truck company dispatchers, shippers, and warehousing companies, mail-back surveys, etc.

*Studies:*

Caltrans' truck count book, based on WIM and other data and updated yearly, provide one source of data; additional counts were provided as part of the Regional Truck Model work, and have been made in subregional studies and even by SCAG staff (RTP work); at present a Regional Truck Count Survey is being conducted by a consulting firm for SCAG on regional cordon lines and screen lines. Other studies include Caltrans' nearly completed Statewide Truck Count Study; and on-going monitoring of truck volumes at cordon lines managed by SCAG Inland Office, using video-taping.

*Recommendation:*

Further counts will need to be conducted, to provide data during a non-recession year; after which a monitoring program is desirable, to supplement on-going Caltrans count efforts in the region.

Timing:

See above.

**Issue 7: Composition of truck traffic using SR-60 is basically undocumented**

A major truck lane project has been included in the Plan for SR-60, yet it is unclear what the composition of trucks is on this major freeway corridor. Some people have asserted that primarily marine container trucks use SR-60, and that an inland port shuttle train would solve the 60 Freeway congestion problem, without needing to build truck lanes. Preliminary identification counts of trucks on SR-60 by SCAG staff have suggested that less than 10% of trucks on the 60 are marine containers; and that there are perhaps two dozen distinctly different kinds of commercial, service, and utility trucks using SR-60 with all kinds of body types and axle arrangements.

There is considerable difficulty in distinguishing domestic and marine containers, and there are also mis-identifications of domestic highway vans as containers. If most of the trucks using the 60 Freeway are not port related, the case for reserved truck lanes is a much stronger one. Proper classification and frequency tabulation of trucks, using reliable and replicable methods, would settle this question.

Solution:

Video cameras used to identify and tabulate trucks using SR-60, by time of day, would be the most accurate way of determining who currently uses this facility and who would be likely to use the toll truck lanes. The advantage of video is that it is independent of the skill and level of dedication of the individual truck counter, and provides infinitely more detailed information than tube counts which cannot distinguish body type (or even, axle arrangement in some cases). It is possible with video to go back and re-examine trucks which are difficult to identify on sight. A study of the SR-60 truck population would also serve as a test-bed for surveying other regional freeways, and could produce as a by-product, a truck identification manual.

The same study could also be used as a test bed for methods of counting and identifying trucks at night, including use of infrared, radar, and starlight scopes, where street lights are not available. So, 24-hour truck identification should be possible. The study could also be used to indicate what kinds of trucks might be given priority to truck lanes, and by knowing whether a high percentage of trucks are domestic or port related, funding sources corresponding to use could be recommended. and cities, funding agencies, general public.

Recommendation:

Conduct this study in parallel with the PSR on the SR-60.

Timing:

See above, should be short or intermediate term.

**Issue 8: The economic value of proposed truck lanes to truckers is poorly understood.**

In our present state of knowledge, it is uncertain what the economic benefits of truck lanes will be to various segments of the trucking industry and shippers in the SCAG region. This information is critical to successful operation and toll collection on the truck lane system.

*Solution:*

Conduct a survey to estimate the savings in labor, fuel, wear-and-tear, and resulting from avoidance of accidents because of the interface between autos and trucks (replacement of rolling stock, insurance, etc.); determine the number of round trips possible during a typical weekday, for port and non-port truck traffic using the SR-60 truck lanes. Establish the likely benefits to the ultimate user (the shipper) from having this faster and more reliable service and determine the level of tolls that would be feasible during commuter peaks, mid-day, evening hours, and night time. Evaluate methods of collecting tolls from truckers, including easy-passes, toll gates, and yearly, monthly, weekly, or daily passes and single trips; and marketing strategies to induce truckers to try the system, aimed at various segments of the trucking industry from commercial truck drivers to occasional U-haul users. Conclude from this the toll revenues that could be generated, and economic benefits to the region.

*Recommendation:*

This study should be conducted in parallel with or following the PSR on SR-60 truck lanes.

*Timing:*

See above; probably intermediate term.

**Issue 9: The propensity of trucks to use toll roads needs to be documented in preparation for SR-60 and other truck lane implementation**

It is uncertain whether truckers will be willing to pay tolls sufficient to pay for 30% or 40% of the costs of a new truck lane system which would include I-710, SR-60, I-15, eventually I-5, and perhaps others. Ability to generate user fees to fund construction will be crucial to actually implementing these truck lanes.

*Solution:*

A study is needed which will establish the locations of toll roads heavily used by trucks in other parts of the country (east coast, middle west, etc.), and determine the level of use and why truckers use these facilities; and what kinds of truckers use these facilities (draymen, domestic loads, tank or bulk vs. packaged goods, light, medium or heavy trucks, U-hauls, utility trucks, etc.). The study will need to determine whether tolls are differentiated by time of day, and establish whether truckers have parallel free routes available and how comparable these facilities would be to truck lanes proposed for this region.

Recommendation:

This should be conducted in parallel with or shortly following the PSR work on ST-60.

Timing:

See above; probably intermediate term.

**Issue 10: Facility size required for the truck lane system needs to be confirmed.**

Other than a general statement that the SR-60 truck lanes should have two lanes per direction, plus recovery lanes, a detailed evaluation of facility size for the truck lane system including I-710 and I-15, and the connectors between different major truck lane corridors, is uncertain, i.e. more than two lanes per direction might be needed in places.

Solution:

Conduct a study to confirm the facility size (i.e. number of lanes) needed for SR-60 truck lanes and ramp connections to other major truck lanes (e.g. I-710 and I-15). Using, in part, the Regional Truck Model, determine the likely split of east-west truck traffic on SR-30 (when complete), I-10, SR-60, and SR-91, by major segment (e.g. 710 to 605, 605 to 15, etc.). Establish time of day truck distribution for present day trucking, for early morning, AM peak, mid-day, PM peak, early evening, and night hours.

The study should factor in suppressed demand for trucking facilities and determine probable peak hour factors with truck lanes. Establish peaking factors (variability in traffic levels) within a typical week, and seasonal peaking factors (summer through fall being the probable peak for consumer goods, but agricultural and other peaks also need to be considered). It should conduct an operations analysis to determine what would happen if there is an incident blocking a truck lane; also estimate the increase in truck lane demand because of a major freeway Sigalert. From the aforementioned, establish the required number of truck lanes during peak season and suitable to maintain at least a level of service “C” at all times.

Recommendation:

This should be done either as part of the PSR work on SR-60 and the corridor work on I-710 and I-15.

Timing:

See above, probably intermediate term.

**Issue 11: Truck origin-destination is difficult to determine for local truck movements**

It is extremely difficult to obtain reliable O-D data for trucks on local freeways and arterials, because some truck movements are viewed by drivers and truck companies as proprietary information and in any case it is difficult to stop drivers on high volume freeways and other highways to ask them where they are coming from and going to.

*Solution:*

A pilot project on I-710 would use video cameras to record entry onto, exit from, and/or passage along different freeway segments and along some tributary arterials to determine where container trucks are going locally. It is suspected that a large number of container trucks are destined for trans-load facilities where marine cargo is removed from marine containers and placed on domestic containers or highway vans. This project would provide a methodology for improving our O-D information, and also provide useful information on logistics. It would also provide excellent time-of-day information for truck movements on this freeway.

*Recommendation:*

Conduct this pilot project prior to finalization of plans for truck lanes or other major facility improvements on I-710.

*Timing:*

See above; probably intermediate-term.

**Issue 12: there is a need to understand where major truck bottlenecks occur.**

Locations of freight/trucking bottlenecks including freeways not being considered for truck lanes, and arterials heavily used by trucks, and where customer and terminal access is a problem, are poorly understood on a regional basis.

*Solution:*

A comparative evaluation of the subregional and city trucking studies that have been completed so far, needs to be made, to determine where bottlenecks or hot spots are already identified by local entities. An “infill” bottleneck study can then be conducted on areas which hitherto have remained unstudied; or alternatively, a series of subregional studies to evaluate general trucking problems in these areas.

*Previous Studies:*

Subregional studies including those by Gateway Cities, San Gabriel Valley, OCTA, Sanbag, WRCOG, LADOT, VCTC, and others.

*Recommendation:*

See above.

*Timing:*

This should be done in the short term.

**INTERNATIONAL BORDER CROSSING ACCESS ISSUES**

**Issue 13: Inadequacy of truck routes leading to the international border crossings in Imperial County.**

Arterial routes used by trucks to serve the Calexico East Port of Entry (POE) have an insufficient number of lanes and inadequately designed intersections, causing increasing



congestion, emissions, noise, and local traffic and residential impacts, and likely interference with Imperial County agricultural truck traffic; also increasing costs for NAFTA-related and crop-transporting goods movement.

*Solution:*

Designated truck routes to serve the Port of Entry to Mexico will require adequate capacity (at least two lanes per direction), adequate intersection design (signaling, turn lanes, turning radii sufficient for big trucks, possible grade separations at intersections with other major routes), adequate sight lines and lane markings where trucks may overtake and pass other vehicles, and shoulders sufficient for trucks to pull over and stop. Freeway routes linking these arterial truck routes require adequate intersection design to minimize accidents.

*Recent studies:*

Per the Imperial County Transportation Plan, arterial widening and intersection improvements are being considered for routes serving the Calexico East POE, including I-8, SR-7, SR-78, SR-86, and SR-111.

*Timing:*

While some improvements have recently been put in place, the truck route program has to be completed in the near term on all significant routes.

## **SEAPORT DEVELOPMENT AND ROADWAY ACCESS ISSUES**

### **Issue 14: Seaport terminal capacity**

Seaport terminal capacity has to be increase to meet the forecast growth of international cargo, both for the region's needs and to satisfy import and export needs of the rest of the country. Closely related to this is the need for additional dredging to accommodate larger, post-Panamax vessels.

*Solution:*

The San Pedro Bay Ports of Los Angeles and Long Beach have revised their 2020 Plan as follows: while the Port of LA is continuing to rely on new container terminals on Terminal Island landfill, the Port of Long Beach plans to grow largely by recycling older finger piers and converting them into container terminals.

*Recent studies:*

This is covered thoroughly in the Ports of Long Beach /Los Angeles Transportation Study, and other port documents.

*Implementation:*

The San Pedro Bay ports are rapidly implementing their expansion plans.

*Timing:*

Short medium, and long term.

## **Issue 15: Development of a regional niche ports**

Smaller, niche ports allow certain markets to be accommodated more efficiently than larger ports, and allow innovation in testing new types of vessels and cargo loading and storage techniques. They also allow both overflow capacity and potential for handling shipments on an emergency basis (with both rail and highway access) in the event a natural or man-made disaster impedes functioning of the big regional ports.

### *Solution:*

Our one regional niche port, Port of Hueneme, is moving forward with its expansion plans, including handling more auto traffic, and additional seafood and fruit transport. It has an unusual joint use agreement with the Seabee base, and novel arrangement whereby both Teamsters and Longshoremen work the docks; finally it is investigating new and increasingly automated methods of transferring and storing cargo, and other new concepts.

### *Studies:*

Recent study by Ventura County/Port of Hueneme

### *Implementation:*

This port is successfully moving forward in implementing its expansion plans.

### *Timing:*

Short, medium, and long term implementation

## **Issue 16: Capacity of the San Pedro Bay Ports to accommodate truck traffic**

An issue is the ability of the San Pedro Bay ports to accommodate drayage truck traffic within the harbor area, without congestion and long queues outside of terminal gates. The queuing problem is in large part brought on by restricted terminal hours. The ports are not operating ports, but instead rely upon their tenants, the terminal operators, to set operating hours. The terminal operators, not wishing to pay high Longshoreman overtime fees, have restricted their operations largely to 8 am to 5 pm. These hours increase the operating costs for draymen and tend to discourage drivers from remaining in this business—many drivers have a marginal existence, and are effectively subsidizing the movement of goods—such that experienced draymen move on and inexperienced newcomers have to go through a learning curve to find practicable ways to earn a living moving marine containers. This probably increases operating costs and drayage related emissions and accident costs, and exacerbates what it already a bad situation.

### *Solutions:*

General drayage truck congestion problems can be solved with improved intersections, better traffic control, and grade separations at railroad crossings. Inflexibility of the Longshoremen to allow additional shifts, i.e. more employees, to be added, in favor of guaranteeing overtime for existing employees, had made it a challenge to solve the queuing problem. Some suggestions include having drivers make appointments at

terminal gates; adding parking at various points away from the docks so the trucks can lay over; and extending hours of warehousing companies inland. However, many warehouses are already open at night, and other shippers/receivers cannot economically extend their hours owing to small scale operation.

*Studies:*

Recent studies by POLB and POLA, including Ports' Transportation Master Plan, have recommended roadway and intersection improvements in the port area.

*Implementation:*

The San Pedro Bay Ports have moved aggressively to solve the dock area traffic problems they are capable of tackling, short of drastically changing the institutional arrangements for handling cargo at port terminals.

*Timing:*

Probably intermediate-term as there are some major institutional problems that need to be worked out

**Issue 17: Congestion related to truck access to the Port of Hueneme**

A number of roadways conducting drayage traffic to the Port of Hueneme have inadequate capacity and require intersection improvements, resulting in interference with other truck traffic and auto traffic, increased congestion and emissions.

*Solution:*

Arterial roadway, intersection and signaling improvements in sections of Oxnard leading towards Port Hueneme.

*Studies:*

Described in Ventura County's recent Port Hueneme Access Study

*Timing:*

Short to intermediate term

**Issue 18: Near-dock highway access to San Pedro Bay Ports**

Freeway congestion on the 710 and other regional freeways makes it increasingly desirable for truckers draying containers to the San Pedro Bay ports to use arterials instead. However, interference between east-west and north-south traffic movements, especially during peak periods limits the effectiveness of this solution.

*Solution:*

The Alameda Corridor rail project as part of the grade separation of rail access to the ports, is also providing highway grade separations along the south end of Alameda Street from SR-91 to the Henry Ford Avenue Bridge.

Studies:

This has been under study since the first San Pedro Bay Ports Access Study.

Implementation:

The Alameda Street grade separation projects are currently under completion, and should be fully operational in 2002 when the corridor begins rail operations

Timing:

Short to medium term

**Issue 19: Movement of empty containers on regional freeways and in the port area**

For the 50% or so of marine containers that are locally bound or locally originated, when containers come into the ports, are loaded onto a chassis and drop off their loads at an importer, before they can pick up an export load, they have to return to the docks empty and be dispatched back out to an exporter, again empty. If one of the two empty trips could be eliminated by making this a “triangular” movement, i.e. a trip to an importer, across town to an exporter (termed a ‘street turn’) and back to the docks, it would be possible to reduce a certain percentage of truck trips and congestion on freeways like the 710.

This is not currently done because there are major information system and institutional barriers: shipping lines want to keep control over their own containers, i.e. not put an APL container on an Evergreen ship; because containers have to be absolutely clean for reuse for manufactured good—you can’t put sloppy products in dry containers, or put foodstuffs in containers that have to be fumigated, etc.; and because you need the right size and kind of containers (e.g. refrigerated or not) available at the right place, at the right time. Also, there are liability problems, e.g. when you try to have a different trucker come in and pick up your container on someone else’s property.

Solution:

It is nevertheless, possible that a small percentage of empty container trips might be eliminated because some shipping lines are beginning to share containers, and new information systems are available to help keep track of where the containers are, in what condition, for what cargo, etc. Even a small percent reduction on the order of 5-10% of local container trips is worth going after, as it will also save fuel and wear and tear (allow cost and equipment savings). A lot of small improvements of this kind for a modest investment will add up to a more efficient system in the long term in terms of reducing congestion, emissions, and accidents along I-710 and other freeways and arterials, especially between the ports and downtown LA.

Further, the inland container yard concept, allowing one trucker to pass containers and chassis on to another trucker away from the dock (somewhere between Carson/Wilmington and downtown LA) is a promising way to allow trip mileage to be reduced for container loads and empties—even though the same number of trips might be made by the truck tractors. Largely, this will be driven by private sector needs and accomplishments, without a major governmental role – we will provide supporting activities, like doing this study, and be ready to provide whatever assistance the private

sector may need and request, that is in our purviews. That is, find out what they need, and help out where we can.

*Studies:*

This is currently the subject of The Empty Container Study, by a consultant for SCAG, the Gateway Cities, and the Port of Long Beach, which is evaluating potential for computerized/internet-based container matching and dispatch services and for off-dock/inland container yards.

*Timing:*

Near term and continuing. Although the percent reduction in trips and mileage would be small, the cost would be minimal, so this measure would be very cost-effective to implement.

## **RAILROAD ISSUES**

### **Issue 20: North-South Train Movements from the Ports to Downtown LA**

The first major railroad issue that was identified in the region was the inadequate capacity, slow running speeds, and lack of grade separation on four important railroad branch lines extending between downtown Los Angeles and the San Pedro Bay Ports. The lack slow speeds are the result an inadequate train control system, without automatic block signals (ABS) or centralized traffic control (CTC), such that these branch lines operated in dark territory, with only radio dispatching to the train crews. This limits train speeds to 10 or 10 MPH (depending upon the line); the fact that these were single tracked facilities also imposed additional delays where trains pass in opposite directions.

In addition, the large number of at-grade crossings, many over heavily-trafficked arterials, has meant major delay to auto, bus, and truck traffic and blockage of emergency vehicle movements. There are resultant vehicular emission impacts from this operation, and in addition noise impacts from trains running through residential neighborhoods, and on some lines, coal dust blowing into back yards. Between 1980 and the time of writing (2001), increasingly long trains, and greater numbers of container trains have operated over these branch lines, in part because of the increased use of near-dock and on-dock marine container loading onto railcars (which are in themselves, mitigation measures to increased drayage of containers on the 710, 110, and other regional freeways and arterials).

*Relevant studies and solution:*

The Ports Access Study, initiated by SCAG, began to investigate railroad improvements along these branch lines in 1982, and recommended consolidation of traffic from the four north-south lines onto a single corridor, along Alameda Street, minimizing the residential and community exposure, and reducing the number of cross streets that would have to be grade separated. It was proposed to provide a grade-separated, double track line with higher train speeds and CTC to provide for faster and more efficient railroad operation. Studies of this corridor continued after the Alameda Corridor Transportation Authority (ACTA) was formed, and recommended building a depressed trainway between Vernon

and Compton, with at-grade railroad operation and highway flyovers thence to the port area. It is also providing an important new freight-passenger grade separation at Redondo Junction, near downtown LA, and providing roadway improvements and grade separations along portions of Alameda Street to facilitate truck operations, between the ports and the 91 Freeway.

An unresolved issue relating to this north-south, largely port-related train traffic, is what level of traffic may need to be carried on other parallel rail lines, even if the Alameda Corridor is triple-tracked (which is the current plan). The cities of LA and Long Beach purchased the UP San Pedro Branch some years ago to handle possible overflow traffic, provide a second route from the ports in the event of major construction work or a derailment blocking or partially blocking the Alameda Corridor, etc. The other two parallel lines are the UP Wilmington Branch and the former ATSF (now LA County owned) Harbor Subdivision. The UP will probably want to continue to hold on to the Wilmington Branch as long as the BNSF operates on the Harbor Subdivision. Both of these branch lines have other alternative uses, including light rail (e.g. Blue Line express service, Crenshaw Corridor LRT, Metrolink service through South Bay, etc.).

*Implementation:*

The Alameda Corridor is under construction, and is expected to open for railroad operation in 2002. The UP San Pedro Branch is currently publicly-owned, but it is unknown whether any specific operating plans, or contingency use plans, have been drawn up.

*Recommendation:*

Completion of the Alameda Corridor is considered to be a cornerstone of the regional transportation program and essential to the efficient movement of goods. As such its completion has been endorsed in all recent RTPs. The most serious challenge after the corridor opens will be operational ones.

*Timing:*

Opening of the Alameda Corridor opening appears to be a *fait accompli* for the near term. The follow-up operational issues will be tackled by ACTA, the Ports, Railroads, etc., not SCAG.

**Issue 21: Railroad East-West Main Line Capacity/Throughput**

Two transcontinental freight carriers, the Union Pacific Railroad and Burlington Northern-Santa Fe Railway, operate over three main lines extending from downtown Los Angeles (the northern terminus of the Alameda Corridor) and Colton Crossing in the Inland Empire, at which point one line extends east towards Yuma, Arizona, and two other lines reach north into the high desert. Train speeds on the east-west main lines between LA and Colton are as high as 65-79 MPH in many places, permitted by block signals with Centralized Traffic Control (CTC), so that the conditions which apply to the north-south lines to the ports, are not a factor here.

Nevertheless, it can take several hours for freight trains to make the trip between downtown rail yards and Colton Crossing, because of inadequate capacity on main line tracks and train interference. Interference is possible not only between trains moving in opposite directions, but also between faster versus slower trains moving in the same direction, (intermodal and passenger trains versus bulk trains or manifest freights, locals and switching movements especially near railroad yards, etc.

Presently the UP has a single track on each of its lines between downtown and Colton (with double track in places on its preferred route, which combines the old UP main west of Pomona with the former SP Alhambra line east of there); and the BNSF has two to three tracks from LA to Fullerton, and two tracks in most places thence to Riverside. Adequacy of current and programmed track capacity would appear to be a major issue for east-west main line development within the urbanized area.

*Solution:*

With increasing international trade related to San Pedro Bay seaport growth, a smaller increase in domestic intermodal freight, and growing passenger traffic at least on the BNSF line, there appears to be a need for increased track capacity such that the UP would have a double track line throughout along its preferred route from LA to Colton (plus an additional single track on the other route), and for the BNSF to have a four track line from LA to Fullerton and three tracks thence to San Bernardino. Complementing these track capacity increases would be improvements to the signaling system as well as strategically placed crossovers, adequate drill tracks, and other track improvements to reduce interference between different classes of trains.

These capacity and related operational improvements would be intended to allow all classes of trains to operate faster and more importantly, more reliably. While the savings in time would be on a relatively small magnitude as part of a total run, say from LA to Chicago or Houston, in the event of a derailment it would provide much better ability to recover from the incident and get back to normal service.

From this viewpoint, main line improvements of the kind described here are essential to carrying the growing international and domestic rail traffic, as well as preventing an adverse shift back to the trucking mode for some of this traffic. It is essential to avoid, at least at the California end of the line, the kind of “meltdown” of service that happened to the UP several years ago because the UP and SP operations had not adequately been integrated after the merger.

In addition to railroad capacity improvements on the LA-Colton rail line segments, improvements may also be desirable on other very heavily used lines, specifically the BNSF route to the east via the Cajon Pass (also used by UP), and the UP Yuma Line or Sunset route to the Gulf Coast. The work in the Cajon Pass would entail a third track, and considerable grading and fill, while the Yuma Line work would involve completing the double track project already initiated by UP.

Closely related to all of the above, it is essential that a competitive balance be maintained between the two Class 1 freight carriers, and that these two railroads perceive that they are maintaining parity in developing their infrastructure and in maintaining their ability to serve their customers adequately, within the LA basin.

*Previous and Current Studies:*

SCAG had earlier investigated solutions to the main line freight capacity problem in its Regional Railroad Consolidation Study (1993). However, the railroads became convinced as a result of that effort that there would be little to be gained from consolidation on a single east-west line, especially since passenger and local services would be required on the other lines. A number of other studies were conducted around the same time by the Southern California Regional Rail Authority, the OCTA, RCTC, the Santa Fe Railway, etc. on passenger rail needs, providing an understanding of how freight and passenger services would share right-of-way along the main lines, especially what is now the BNSF line between LA, Fullerton, and Riverside.

At present, SCAG has three railroad study efforts under way. The Truck and Rail Study is evaluating the markets served by trucks and freight trains and future trends in rail freight service, and making general recommendations on desirable capacity improvements needed (including all of the main lines, e.g. LA to Northern California). The LA-Inland Empire Railroad Main Line Advanced Planning Study is looking at specific capacity improvements that will be required along the main lines of the two railroads between LA and Colton, the expected growth in train traffic, and what the cost implications will be. It will also look at possibilities for rationalization of freight and passenger main line rail infrastructure within the region.

Finally, the Trans-Basin Train and Vehicle Mitigation Study is specifically investigating the potential for public-private partnerships combined with innovative public financing packages that could generate new funding to pay for needed improvements of the heaviest main lines within our region in timely fashion, and allow implementation of the freight and passenger rail infrastructure. At the same time it would permit the railroads to use their scarce capital dollars to improve segments of the main lines outside of our region.

*Recommendation:*

The Truck and Rail Study and the LA-Inland Empire Study will indicate what is feasible and what infrastructure will be needed for an efficient railroad operation. The Trans-Basin study will build on this, and other previous studies. If successful, it can lead to creation of a JPA or other organization that can implement the improvements needed at a lower cost than the railroad industry can achieve on its own, resulting in a win-win situation in which we will have an efficient, streamlined railroad operation which can maintain and gain its mode share, and allowing the growth of international trade with major environmental and congestion benefits to the region. Hence, this study should be continued and supported by whatever additional consultant contracts are needed.



In moving these studies towards implementation, it is recommended that parity be maintained between the two railroads whenever feasible. This is an important element in any future work with the railroads on main line development.

Timing:

Intermediate and long term.

**Issue 22: Railroad-Railroad Grade Separations**

Interference between major freight and passenger flows on the railroad main lines may in some cases require railroad-railroad grade separations to reduce major delays to port and domestic freight traffic and to commuter movements. A railroad-railroad grade separation is already under construction to separate passenger services from freight service at the east end of the Alameda Corridor.

Solution:

A second, critical railroad-railroad grade separation project will be necessary in future decades at Colton Crossing, where the UP Alhambra main line extends east to become the Yuma Line (conveying freight trains towards Houston, Texas) and crosses the BNSF main line, which carries not only heavy Santa Fe freight traffic, but also additional UP trains and Metrolink passenger trains. This is already becoming a problem for Metrolink service, and with the growth in port traffic it will eventually become a bottleneck for rail freight growth.

If and when Colton Crossing is converted into the Colton separation, it might take the form of the UP Yuma Line flying over the BNSF, with the east-west rail line rising up on structure to the level of the parallel 10 Freeway, which lies just to the north of the rail line. It could entail reconstruction of a highway grade separation to the west of Colton, and very possibly a reconfiguring of the lead from West Colton Yard on the UP (already a railroad-railroad grade separation), to the Palmdale Cutoff, which provides a link from the UP yards to northern California as well as to the BNSF north-south line, over which UP has trackage rights.

An additional railroad-railroad grade separation proposal relates to the potential rationalization between freight and passenger service on the UP main lines. It has been proposed a number of times to operate the major flows of UP freight service along the UP line west of Pomona, and the UP (ex SP) Alhambra Line east of Pomona. This would entail re-routing all of most of the Metrolink LA-Riverside via Ontario service, to the UP (ex SP) Alhambra Line between LA and Pomona, with a flyover to allow the passenger trains to jump over the freight main line in Pomona and gain access to the old UP main line east of this point. (Metrolink already has a similar flyover in El Monte where its San Bernardino Line trains jump over the Alhambra line.)

(A correlary is that there would also be potential to allow the San Bernardino Line Metrolink trains to operate over the Alhambra Line in a one-way couplet, with the State Street Line that is already used for the LA-El Monte segment of that service. This would

avoid the need to tear up and relocate the El Monte Busway lanes which lie on either side of the State Street Line, in order to provide higher frequency, reverse-peak commuter service on the San Bernardino Metrolink Line, or to deadhead Metrolink equipment. It would also allow some new passenger rail service in communities like Alhambra and San Gabriel.)

#### Previous and Current Studies

The Colton Crossing grade separation was probably first studied in SCAG's Railroad Consolidation Study, and in studies at the same time by the ATSF Railway. It was included in AB 2928 for a major portion of San Bernardino County's grade crossing money. It is currently under study in SCAG's LA-Inland Empire Main Line Study, and it is assumed that innovative finance packages developed under the Trans-Basin Train and Vehicle Mitigation Study will also apply to the Colton Crossing work. The discussion of UP Main Line/Alhambra Line rationalization relating to freight and passenger rail use was also initiated in the RR Consolidation Study, and is under consideration in the LA-Inland Empire and Trans-Basin projects as well.

#### Recommendation:

Grade railroad-railroad grade separations at major choke points including Colton Crossing should continue to be a priority for study and funding. All reasonable alternatives should be considered at Colton Crossing (including reconstruction of the lead to the Palmdale Cutoff) and consideration should be given to a Pomona separation in the event an agreement is reached on use of the Alhambra Line, west for UP Riverside commute service. These grade separations should receive priority treatment under any innovative funding packages for implementing railroad infrastructure.

#### Timing:

Intermediate and long term.

### **Issue 23: Railroad Intermodal Terminals**

Adequacy of capacity and location of rail-truck intermodal facilities is an important issue. While we presently have on-dock loading of marine containers at marine terminals in the San Pedro Bay Ports, and in addition one near-dock facility (UP: ICTF), three downtown facilities (UP: East LA Yard and LATC, BNSF: Hobart), one facility in Industry (UP) and one in San Bernardino (BNSF). Other than the on-dock facilities, these intermodal terminals are not equally available to both Class 1 railroads. This is so because each is owned by only a single carrier—there are no joint-use intermodal facilities.

This is causing major imbalances in drayage truck movements, resulting in congestion on regional freeways and unwanted emissions, higher costs, and likely increased accidents. Specifically, while on-dock loading facilities at the ports are invaluable as a way to load large lots of containers to major inland destinations (e.g. Chicago), efficient logistics dictate that near-dock facilities are also needed to handle small lots of containers from multiple terminals. This function is in part handled by the ICTF in Carson, 5 miles north of the ports at the end of the Terminal Island Freeway, where UP intermodal trains are made up with the containers being loaded on a first come, first served basis.

The Santa Fe does not have a facility of this kind available, so the overflow of containers that cannot be made up into solid trains of well cars and flat cars at the ports, still have to be drayed to that railroad's downtown rail yard (Hobart), over the congested 710 Freeway.

On the other hand, only the BNSF has an intermodal facility in the Inland Empire (San Bernardino). The UP has a facility at City of Industry, but is in serious need of a second facility somewhere farther east in the Inland Empire (perhaps Fontana, but other sites have been suggested). Lack of such a facility means that trailers and domestic containers, in order to be loaded onto UP flatcars, have to be drayed either to Industry or East LA Yard, resulting in empty container miles and increased congestion on the 60 and 10 Freeways. Even the BNSF realizes that it needs more capacity for loading intermodal equipment in the Inland Empire and is actively pursuing a second terminal (they have rights to use Norton AFB for this purpose, but access is a problem).

*Solution:*

The BNSF would prefer to use Hobart Yard to load domestic trailers and containers at that downtown facility. Hence, they would like a new ICTF of their own, perhaps at the old Watson Yard site. Implementation of a BNSF ICTF-type facility near the ports would reduce empty container miles and unnecessary drayage by truck to downtown LA. This includes the ability to load onto railcars near the ports, domestic containers of trans-loaded marine cargo (marine containers that have been sorted at plants in or near Carson, to domestic containers).

A new joint-use facility for both railroads, or individual UP and BNSF facilities in the Inland Empire might provide solutions to the inland intermodal capacity problem. It should be added, that since we have two major railroads, providing equivalent service (loading points for containers and trailers) all through the region, would help to maintain a competitive balance. And, in the absence of the most direct movement of containers with terminals near point of origin, some traffic is probably being diverted to trucking that should be handled by the rails, which would reduce congestion and pollution even more.

*Studies:*

The Truck-Rail Study, LA-Inland Empire Study, and Trans-Basin Train & Vehicle Mitigation Study are evaluating and will evaluate optimal number, location, size, and funding potential for intermodal facilities for domestic and inland port traffic. These would include a new near-dock intermodal container transfer facility or facilities to supplement the ICTF, and new potential Inland Empire intermodal facility locations in Fontana, San Bernardino, and other locations. The WRCOG Inland Port study will also look at inland intermodal terminals (probably a facility at March AFB).

*Recommendation:*

Working closely with the subregions and the Railroads, continue to evaluate the potential for developing new near-dock and inland intermodal terminals. Determine likely

throughput, capacity to handle the shortfall in containers and trailers for each area, and establish benefits in terms of reduced congestion, lower emissions, lower costs (operating and capital), lower accident rates, and less truck diversion. Include intermodal terminal development as part of any innovative railroad infrastructure development package.

Timing:

Intermediate term.

**Issue 24: Capacity to Store trains Entering/Leaving the San Pedro Bay Ports**

A special capacity issue relates to where trains are stored as they come off of the Alameda Corridor and wait to be dispatched to various on-dock marine terminals. Failure to place trains in a yard near or beyond the south end of the Alameda Corridor could result in reduced train speeds and serious congestion of container trains on the corridor itself, perhaps even causing back-ups in the downtown rail yards and on the east-west main lines themselves. There may be a similar problem regarding trains moving north as they are “handed off” the Alameda Corridor and onto the east-west main lines.

Solution:

Innovative railroad finance methods per SCAG’s Trans-Basin Train & Vehicle Mitigation Study might be applied to implementation of these yards.

Studies:

This issue is believed to be included in the recently completed San Pedro Bay Ports Transportation Master Plan. (Need to research this and talk to the Ports and ACTA). Some light will probably be shed on this issue in the LA-Inland Empire Rail Study, with respect to the reverse movement, i.e. from the Corridor to the east-west main lines.

Implementation:

At least one significant rail yard (need to fill in name of yard) has been put in place just south of the Badger Island Bridge, which will facilitate storage of container trains as they come off the southern end of the Corridor. It is not known whether Dolores Yard, along the south end of the Alameda Corridor, will have this function in part, or exactly what is done at the northern end of the Alameda Corridor on the approaches to East LA and Hobart Yards, to facilitate storage of container trains moving the other direction.

Recommendation:

While it is suspected that ACTA and the Ports have adequately addressed this issue in recent studies, this should be confirmed. It is possible that some additional work should be done on this, as part of evaluation of a new ICTF for the BNSF either at Watson Yard or another location near the ports.

Priority:

Short and intermediate term (some projects already initiated).

**Issue 25: Inland Seaport Question**

The question has often been raised whether inland marine container terminals should be established. In part this has been prompted by the concern that the area behind the docks is too valuable to use for container storage, and that some of the storage and sorting of containers should be carried on inland, perhaps far inland.

*Potential solutions:*

Two kinds of inland marine container movements by rail are possible, which define different terminal functions. One would entail loading all of the “bridge” traffic from container ships onto shuttle trains which would run to some inland terminal (usually assumed to be at Fontana, San Bernardino, or a similar location). Here the containers would be re-loaded onto line-haul double-stacked trains, for bridge movements to other parts of the country (landbridge= from Asia by water to US, overland by rail, thence to Europe by water; minibridge=from Asia by water to US, overland by rail to US East Coast port cities; microbridge =from Asia by water to US, overland by rail to US inland points such as Chicago or Houston).

The argument against this kind of operation is that it entails, in addition to the internal movement of the container from ship to railhead at the dock, additional steps of unloading, storage, and reloading of containers at the inland point. Even with a fairly good organization of internal shuttles to and from the railhead at the dock, as proposed by VZM/Transsystems, in terms of logistics, this is counter-intuitive for high-priority containers. (A possible way to reduce the number of lifts might be to directly load containers on flatcars on the dock, with grade-separated loop tracks that would provide a level separation for off loading “bridge” containers and local containers that would go on container trucks. This was, in fact the first VZM proposal; it would require some additional infrastructure at the docks to accomplish.)

Among the arguments against this kind of inland transfer of containers, are the following: that the ports have not yet run out of space for storing containers; that they might go to additional parking decks for containers on chassis, or vertical automated container storage, etc.

The second inland port concept is to use short-haul shuttle trains for containers bound for the Inland Empire. This would replace drayage by truck along the 710, 60, 10, and other freeways, and could reduce truck congestion and emissions. A recent internal SCAG staff study of double-stacked inland shuttle trains, indicated that this would not be feasible for most inland container movements according to normal economic yardsticks. Also, one of the railroads has objected to the use of their scarce track capacity for short distance shuttle movements, arguing that they make their money on long hauls, not drayage.

Notwithstanding the above, Tacoma and Oakland are known to be planning relatively short haul container shuttles, which would be subsidized and would allow public entities to avoid building additional highway infrastructure. Counter-arguments include the following. With regard to the first concept (bridge traffic, long-haul containers handled

inland), perhaps some containers might be taken off of trains for customs inspection at an inland port facility; or the inland port might be used largely for empty container storage.

Or, perhaps the main function would be to take blocks of cars (e.g. a 5-platform, 10-FEU container well car) and re-block them into line-haul trains at the inland port, with relatively few containers (those to rather small volume destinations) actually being unloaded and reloaded at the inland port. Container priority might determine what is sorted or re-blocked inland; the highest priority containers might go straight through without stopping, and lower priority containers only would be processed there.

Yet another interesting aspect to this is that minibridge traffic coming from Europe by water, across the country by rail, and being unloaded in the LA region, might be very amenable to being unloaded at an inland point, especially if distribution centers, deconsolidators, etc, are located nearby.

With regard to the other fundamental concept, that is short distance rail shuttles for containers inbound to the region and currently drayed by truck to the inland empire, an argument is that some rail shuttles, if it is possible to strategically schedule them to coincide with highway peak periods to provide a maximum advantage for the shuttle, might arguably be subsidized. This might be done to either postpone some highway construction such as truck lanes, or even with truck lanes in operation, if they are very successful, to provide a supplemental service to permit them to function effectively. (It is understood that the 91 toll lanes are constantly having the tolls adjusted upward, to permit them to operate free-flow.)

It has also been suggested that new domestic intermodal terminals could be built to a somewhat larger size to allow a test of some marine container shuttle or transfer concepts at the same facility. If the marine container use did not pan out, the extra space could eventually be allowed to revert to domestic container/trailer loading. Yet another idea is to test the idea of an inland shuttle using road-railers operated on the Metrolink San Bernardino Line tracks (SCRRA would probably not permit the heavier double stacked trains, but might allow, for a fee, operation of this kind of “carless” intermodal service inland on their property).

Finally, there is a question of synergy between inland intermodal, inland seaport, and inland air cargo facilities, relating to nearby location of industrial development and third-party logistics firms such as warehouses, forwarders, consolidators, customs brokers, etc. Innovative financing packages such as are being investigated by SCAG’s Trans-Basin Train & Vehicle Mitigation Study could facilitate expanding intermodal terminals to test inland port operational concepts..

#### Studies:

As noted, some basic concepts have been evaluated by VZM/Transsystems; by the Ports of Oakland and Tacoma; and recently a double-stack shuttle train concept to move containers from the San Pedro Bay ports to the Inland Empire, as an alternative to truck drayage, was investigated by SCAG staff. A road-railer concept was also studied as part

of the Agile Port Project, by SCAG with consultant help. Inland rail shuttles are being tested overseas, and BNSF is known to be interested in some inland port operational concepts, probably in conjunction with their proposed new inland domestic intermodal facility.

*Recommendation:*

This is a very complicate subject, and there are many operational concepts. A further, comprehensive study seems warranted.

*Timing:*

Intermediate and long term

**Issue 26: Other Railroad Logistics Concepts**

There remain some additional railroad logistic issues, including the question of optimal yard locations and yard designs for handling railroad bulk unit/solid trains and carload or manifest trains.

*Potential solutions:*

There has been discussion of moving some of the carload-handling activity farther out, to locations like Barstow, Beaumont, etc. There is also a question of expansion of “carless” rail intermodal services using roadrailer, freight-mate, railrunner, iron highway, and other similar concepts. The UP inherited such a service using roadrailers, from SP, and it is understood that BNSF has added it. The intent is to provide ways to increase medium to short distance rail freight use, and otherwise rationalize the split between trains and trucks to speed rail delivery and lower highway congestion.

Another interesting new concept is the replacement of carload traffic (local delivery of railcars to industrial sidings or team tracks) with unit trains of boxcars to transload facilities (other definition of transload) in which loads of paper and such commodities are moved across a linear dock to trucks which will bring these loads to their destinations, more efficiently than by direct delivery to shippers. It is understood that UP has instituted this kind of service at its Valla Yard. In France, the same method is or was used for Less than Truckload freight, hauled in unit trains of boxcars to transfer terminals where the package freight was put on conveyers to waiting delivery trucks. In this sense, it is very much like rail intermodal.

The funding of new facilities to handle these operating concepts, or construction of new class yards might very well however require innovative finance methods such as are being investigated in SCAG’s Trans-Basin Train & Vehicle Mitigation Study

*Studies:*

Other than railroad industry studies, recommendations are made in SCAG’s Truck-Rail Study on the introduction of new carless road-rail service and creation of new transload facilities to replace local rail carload delivery with unitized boxcar trains. The State

DOT's 2001 California Freight Rail Plan has also discussed ways to expand funding of short line railroads.

Timing:

Intermediate and long term

**Issue 27: Use of Railroad Branch Lines Including Those Paralleling the Alameda Corridor**

An unresolved, and cross-cutting issue relating to north-south, largely port-related train traffic (which will largely be handled by the Alameda Corridor), is what level of traffic may need to be carried on other parallel rail lines, even if the Alameda Corridor is triple-tracked (which is the current plan). The cities of LA and Long Beach purchased the UP San Pedro Branch some years ago to handle possible overflow traffic, provide a second route from the ports in the event of major construction work or a derailment blocking or partially blocking the Alameda Corridor, etc. The other two parallel lines are the UP Wilmington Branch and the former ATSF (now LA County owned) Harbor Subdivision. The UP will probably want to continue to hold on to the Wilmington Branch as long as the BNSF operates on the Harbor Subdivision.

At present it is uncertain how these branch lines would be used after the "Harbor Shift Date" of traffic to the Alameda Corridor: how the communities along these routes would react to continuing, or future use of the lines for through freight to the harbor (how many trains per day, how long, and of what kind) and how these lines might be maintained for local freight service in the event it is desired to provide passenger service along them.

Potential solutions:

Both of these branch lines have other alternative uses, including light rail (e.g. Blue Line express service, Crenshaw Corridor LRT, Metrolink service through South Bay, etc.). It is assumed that some local freight service will be handled by all of these lines, so as to help maintain the railroads' customer base; this would either be on tracks additional to any transit facility, or over the same tracks at a different time of day (e.g. like night use of the MTDB light rail lines).

If container trains continue to be operated over the Wilmington Branch in parallel with 55 MPH light rail operations, the Santa Fe's experience from Fresno in which increasing train speeds cut the accident rate (motorists respect fast-moving trains) should be applied. A future Wilmington Branch operation with container trains should be speeded up to 40 MPH, so that freight and passenger trains are much closer to parity, so that motorists no longer believe they can "beat the train to the crossing" where freight train speeds are low.

Potential uses of other branch lines, e.g. the Torrance Branch, Stanton Branch, etc. for passenger service while retaining freight access, might also be considered. Acquisition of some additional lines with passenger rail potential might be a useful by-product of an innovative railroad infrastructure package under development per SCAG's Trans-Basin Train & Vehicle Mitigation Study.



Studies:

For alternative uses of rail lines, previous work by LACTC, LACMTA, SCAGs Railroad Right-of-Way Evaluation, etc. The ports probably have documentation on the intended use of the UP San Pedro Branch which was acquired for public use.

Timing:

Long term.

**Issue 28: Railroad/Highway Grade Crossings**

Railroad-highway grade crossings cause considerable delay to auto and truck movements across the tracks of railroad main lines, produce noise impacts (air horns, bells, etc.) in residential areas, and the potential for fatal accidents, injuries, and property damage when motor vehicles fail to clear crossing areas in time to avoid collisions. The delay also results in negative emissions impacts as vehicles are caught in queues, and can interfere with emergency vehicle movements.

Normally, delay occurs only to motor vehicles at crossings. Trains have the right-of-way where gates, lights, and bells are provided and train speeds are not impacted under normal conditions. However, in the event of an accident, train delay will also occur, perhaps enough to disrupt main line operations.

Solution:

Grade separations are the ultimate, and most expensive solution, but one which is warranted for high volume arterial crossings. Grade separations allow safety, noise, emissions, and delay impacts to be eliminated simultaneously. There are also cheaper solutions such as widening crossings (increase vehicle storage space) and ITS (coordination of signals with railroad crossing circuitry) where arterial corridors closely parallel rail lines; these kinds of solutions can improve safety somewhat, and reduce delay and emissions.

Finally, there are numerous, much cheaper grade crossing safety devices such as four-quadrant gates, divided approaches to crossings, “bearded” gates, strobe lights, supplementary warning signs, which can improve safety; roadway surface improvements which can reduce vehicle damage; and wayside horns and directionalized grade crossing warning loud speakers that can minimize noise impacts on neighborhoods.

Recent Studies:

There have been a number of corridor studies of grade crossing delay and safety improvement, including work by the SGV COG/Alameda Corridor East Construction Authority; by the OCTA and local cities on the Orangethorpe Corridor; by WRCOG (At-Grade Rail Crossing Analysis); by SANBAG (Inland Goods Movement Study); by the Gateway Cities; by the South Bay Cities (current Rail Corridor Study); in AB 2928, etc. as well as some individual grade crossing studies.

These studies would variously grade separate or widen crossings of main lines and branch lines, and apply safety measures or close crossings where separation or widening are not feasible or are too costly. Innovative/advanced grade crossing mitigation measures such as 4-quadrant gates, wayside horns, ITS, etc. applied to crossings of minor arterials have been discussed in SCAG's LA-Inland Empire Main Line Study and others. (mention also AB 2928).

Implementation:

The Alameda Corridor East has gone into the implementation phase, while other corridor programs including the Orangethorpe Corridor are slated for implementation in the RTP; some of this work is funded under AB 2928.

Recommendation:

Given the tremendous number of crossings that could be separated, there is a need to further prioritize which crossings really need to be closed in this way. This has to a large extent been done by the AB 2928 group. However, further work is likely needed, especially in the area of innovative finance techniques per SCAG's Trans-Basin Train & Vehicle Mitigation Study, that could expand the levels of funding that might be made available from railroad sources. Further work is needed feasibility and funding potential on multi-crossing projects like the Placentia Trench before a decision is made to proceed.

Timing:

Intermediate, medium, and long term depending on the specific grade crossing project. Low-cost grade crossing safety projects, like the Jump Start program of ACE, should be done first, followed by capital intensive projects. Only construction of rail lines in open cut or on embankment, aerial structure, etc. would require that groups of adjacent grade crossings be improved at the same time.

## **NATIONAL TRADE CORRIDORS SERVING SOUTHERN CALIFORNIA**

### **Issue 29: Southwest Passage development potential**

The broad transportation corridor extending from California through Arizona and New Mexico to Texas, appears to have considerable trade potential, including through east-west movements and offset north-south movements taking advantage of the superior existing surface transportation facilities along the U.S. side of the border. There may also be some land bridge potential for through movements between the Pacific Rim and the east coast of Mexico, the Caribbean, northeastern South America, and Africa, as well as

the east coast of this country. Thus far, only a small section of this corridor in California has received National Congressional Corridor designation.

*Solution:*

The Southwest Passage would comprising the I-10 corridor together with the I-8 highway corridors in California; the east-west UP and BNSF railroad main lines that run from California to Texas; the southern California ports; the Ports of Houston and Galveston; and airport/air cargo facilities and international gateways en route. It would also encompass, as part of the enabling Southwest Compact, maquiladora facilities along the south side of the border area and other joint economic development between the U.S. and Mexico.

Transportation facilities would include an improved I-10 freeway corridor, potentially with added lanes, improved interchanges, bypasses around congested points and ITS development; and improved rail lines with full double track, improved signaling systems, and grade crossing improvements. Air cargo facilities would be developed with establishment of transportation facilitation centers combining light industry, warehousing, and several transportation mode alternatives, while rail and highway access to international border crossings would be enhanced. The intent is to improve the economic competitiveness of the southern California and of the corridor states across the southern U.S. to Texas, as well as the Mexican border states.

*Studies:*

The Southwest Passage, supported by the Southwest Compact, continues to be under study by the NAFTA Subcommittee of SCAG. In addition, Caltrans has a CA-Florida I-10 highway corridor study underway.

*Recommendation:*

Continue to work with other states and MPOs in those states to advance the concept. It may be possible to build on the I-10 corridor coalition that was recently formed, go generate more momentum to look at railroad throughput and other Southwest Passage issues.

*Timing:*

Intermediate to long term.

**Issue: Other national trade corridors**

Identification and prioritization of other major trade corridors, not otherwise mentioned above (to add)

*Study:* *this is covered in the state DOT's Global Gateways Development Program project*

**AIR CARGO**

**Regional Air Cargo Vision**

The 2001 RTP Aviation Plan forecasts that 9.5 million tons of air cargo will be handled by the region's system of airports in the year 2025. That amount of activity would represent a 265% increase in volume over the 1997 movements of 2.6 million annual tons (MAT). To meet this anticipated future demand, along with the expected increase to 167 million annual passengers (MAP) from the 80 MAP in 1997, the approved RTP calls for both an expansion of existing commercial service airports and the development of several new facilities at former military air base sites, including the El Toro Marine Corps Air Station, Norton Air Force Base (San Bernardino International Airport), George Air Force Base (Southern California Logistics Airport), March Air Reserves Base (March Global Port), Palmdale Regional Airport, and Point Mugu.

The adopted Regional Aviation Strategy seeks to disperse commercial aviation capacities throughout the region, thereby relieving operational and congestion pressures at LAX and other constrained airports in urban centers. This dispersal of activities is also intended to foster the expansion of facilities proximity to the geographic areas of anticipated growth. Implementation of the RTP Aviation Plan will support Southern California's economy by maximizing the benefit of transportation investments and by promoting facility developments fully compatible with regional growth patterns and envisioned land-uses.

### **Issue 30: Accommodating growth in air cargo demand**

Air cargo enters the region through the region's cargo-capable commercial airports. Each of these airports possesses a unique set of cargo handling characteristics, and the RTP is designed to optimize the efficiency of the overall air cargo system by capitalizing on the relative strengths of each facility.

It is recognized that rapid growth in demand for air cargo services will not be satisfied by existing facilities, particularly with constraints on LAX expansion. Failure to accommodate this growth will cause the region to pass up major economic opportunities, cause diversion of air cargo to other cities (Las Vegas, Phoenix, etc.) with the cargo trucked in, and cause other cargo that would have moved by air to be transported by expedited transcontinental truck movements. The latter two outcomes would increase congestion on the freeway system and increase truck-related emissions.

#### **Solution:**

Per the diffuse airport development pattern called for in the 2001 RTP, expansion in the use of existing airports in the Inland Empire (Ontario) and newly-emerging airports such as Norton, March, George, El Toro, and Palmdale should be able to accommodate this demand.

#### **Studies:**

There have been a number of studies on redevelopment of former military bases as all-cargo airports and joint military/civilian use of other facilities, conducted by SCAG's Aviation Section, Aviation Task Force, ATAC, and individual airport authorities. Specific studies include the 1990 Goods Movement at LAX study, and the 2001 Regional Air Cargo Study, whose completion date is 4/30/02

Implementation: George already has an air cargo operation for air cargo; Norton is starting up; March is likely in the near future.

Recommendation:

Implement the expansion of cargo airports in the Inland Empire and other locations, supported by public-private partnerships. Conduct new studies on economic impacts and benefits, co-location with airport facilities of third-party logistic firms and evaluation of synergy with truck lane and main line rail corridor development that can serve air, rail, and trucking as shipment alternatives, with the specific mode being chosen based on shipment priority (option of using multiple modes for staging shipments of the same order).

Timing:

Near, intermediate, and long term.

**Issue 31: Airport ground access for air cargo movements**

All ground movements of air cargo proceed by truck from the airport onto local arterial streets and highways. Problems include congestion surrounding urban airports, and the remote location of certain airports. To be effective in expediting cargo movement, adequate connections need to be provided to surface streets, and to the major arterial and highway network. It should be noted that without providing adequate access along all surface transport links, airport generated trips could merely serve to compound congestion on the proximate surface network. And, inadequate ground access to air cargo facilities located at passenger/cargo and potential new air cargo facilities could limit air cargo growth and effectiveness of existing cargo transport operations.

Solution:

Provide improved highway access to airports generating or potentially generating high volumes of air cargo, including more arterial/freeway lanes in the vicinity of airports; intersection, signalization and ITS improvements; better designed ramps; access lanes to cargo terminals; parking and turning areas, etc.

Studies:

Past studies include the 1990 Goods Movement at LAX study; pending studies include the Ontario Airport Ground Access Study, completion date 6/30/02

Implementation:

Both Baseline and planned ground access projects for each airport facility are presented in the RTP. The number of Baseline projects and their cumulative valuation by airport, are:

LAX:	8 projects for	\$67,142,000
BUR:	2 projects for	74,108,000
SNA:	7 projects for	58,059,000
LGB:	1 project for	15,890,000
MAR:	1 project for	7,348,000
ONT:	5 projects for	23,266,000
PSP:	3 projects for	50,893,000
PMD:	6 projects for	48,320,000
SBD:	4 projects for	31,450,000
SCI:	6 projects for	154,646,000

Timing:

Short, intermediate, and long term

**Issue 32: Air cargo and security**

In the aftermath of the terrorist attacks on September 11, 2001, increased security for passenger airliners and cargo planes will need to be implemented. As the 9-11 terrorist strategy of hijacking planes and deliberately crashing them into buildings is known and counter-measures are being planned, they are likely to consider placing bombs in passenger aircraft instead. Hence belly cargo may be banned from passenger aircraft. This will place additional burdens on all-cargo services. At the same time, steps will need to be taken to prevent hijacking of cargo aircraft which the terrorist groups might try to use in the same way that passenger airliners were, on 9-11.

Solution:

Accelerated expansion of all-cargo airports and all-cargo service, with additional facilities and provision for security associated with all cargo loading and operation of the aircraft.

Implementation:

Too early to comment; but expected to be a high priority at federal, state, local, and private levels.

Timing:

Short term, but impacting also intermediate and long term demand for cargo facilities.

**General Planning Issues**

**Issue 33: Goods Movement Problem Identification**

As a critical part of the planning process, it is useful to develop in detail a list of goods movement issues and problems associated with each issue, and potential solutions. This would be a guide to regional, subregional, and other agency planners in developing further research projects.

*Solution and Relevant studies:*

A Matrix of Issues, Problems, and Potential solutions was completed by the Goods Movement Advisory Committee in 1999-2000 and included in the 2001 RTP Technical Appendix. This is organized by mode or transportation function (railroads, trucking, airports, marine ports, intermodal) and issues include: traffic growth, national competitiveness, terminal and highway access, intermodal transfer, air quality, safety, legislative needs, and regional system development. A set of guiding principles for goods movement system improvement were identified after completion of the matrix.

*Recommendation:*

In the **short term**, distribute to interested parties and include in future documents on regional goods movement planning as appropriate.

In the **longer term**, it may be helpful to identify and check off which of the specific problems have been addressed in completed studies, which are under study, and which have moved on to an implementation phase; and which are more appropriate to be addressed at a regional level, and which at a subregional level.

*Timing:*

The matrix has been completed and is already available to everyone on the GMAC list and anyone who requests a copy of the RTP Appendix.

**Issue 34: How to improve private sector participation in the study process?**

In common with most other MPO goods movement committees, SCAG's Goods Movement Advisory Committee has had a difficult time attracting and keeping private sector attendance at committee meetings. This reduces the effectiveness of the goods movement study process, as private industry input into work programs and research studies is essential.

*Solution:*

Probably the two most successful MPO goods movement committees are Seattle's Freight Mobility Roundtable, which has a quarterly early-morning breakfast with private sector people, and Philadelphia's Goods Movement Task Force, which directly inputs the Overall Work Program and publishes a monthly freight information bulletin.

*Recent studies:*

Staff phone and internet survey of other MPO goods movement activity, and follow-up questionnaire sent to GMAC.

*Recommendation:*

The GMAC survey indicated a strong interest in having direct staff outreach to private freight companies (go to their organization's meetings) and developing a list of industry contacts who could be on call; requiring an increased staff commitment (number of staff) to goods movement.

*Timing:*

Could be initiated in spring of 2002, depending upon the amount of staff effort provided.

## **Freight Data and Forecasting**

### **Issue 35: Better information is needed on freight tonnage, volumes, and value for goods originating from/destined for/passing through the region**

There is a need for more reliable information on tonnage, volume (cube), and dollar value of cargo within the region, coming into the region, originating from the region, and passing through, both for international and domestic shipments. Alternative sources of data on trade volumes seem to give conflicting reports on cargo movements, in part because of which cargo is included or excluded in summaries. Seaport data tends to be relatively good, while data on domestic shipment is relatively scarce. Further, reports often indicate “imports” to the region which may be either coming from overseas or from points inland (with the corresponding terminology problem for “exports”).

For cargo that is transloaded from marine containers to higher-cube domestic containers or trailers, it may either be double counted or lost in reports of imports to inland points. Further, reports need to be available that relate the above to TEUs or FEUs, truckloads, rail carloads, plane loads, etc., and tonnage and volume of shipments needs also to be translated into train loads.

#### *Solution:*

A comprehensive study is needed to evaluate tonnage, volume, and value of cargo coming into, originating from, and passing through the region, including evaluation of intermodal shipments, transloading and other supply chain events as cargo is shipped; also providing statistics on truckloads, carloads, trainloads, etc. The study should focus on recent horizon years and indicate what the reliability of different data sources is. This would be of great value not only in being able to assess current conditions, but also to allow more accurate forecasts to be developed.

#### *Recent reports:*

Information on trade volumes has been developed in the SCAG Inter-Regional Goods Movement Study, Truck-Rail Study, and the Ports’ Transportation Master Plan. The SCAG 01-02 OWP identifies under Goods Movement Regional Priorities, projects to report on international and domestic trade forecasts, which would need studies of this kind as background.

#### *Recommendation:*

Conduct this study within the next year or two.

#### *Timing:*

Repeated collection of data or monitoring should be done periodically, every few years once reasonably reliable sources have been identified for different purposes, and adequate methodologies pin-pointed.



**Issue 36: Methodologies for international and domestic trade forecasts, mode splits, and cost elasticities are needed.**

At present there are no reliable methods for forecasting future goods movement flows into, out of, or through the region, especially for domestic trade; for cargo tonnage, volumes, and value, and different commodity classes. Further, trends in ship size, intermodalism, transloading, and other factors impacting goods movement supply chains need to be thoroughly understood for making adequate future forecasts for planning purposes, so that goods movement capital requirements and economic and operational impacts can be foreseen.

*Solution:*

Conduct a study or studies of international and domestic goods movement flows within, into, out of, and through the region. This would include methodologies for estimating the region's share of US bilateral trade flows and locally produced goods, the portion of international and domestic cargo that remains for local consumption, and that which is transloaded. Further, mode splits should be developed for both international and domestic cargo. As part of this, cost and other elasticities will need to be developed to show how transportation costs, and other factors will impact mode selection.

*Studies:*

Studies of international and domestic trade forecasts and methods of estimating mode split and cost elasticities is included in the 01-02 OWP under Goods Movement Priorities. No RFPs have been let so far.

*Recommendation:*

Begin work on development of this predictive capability simultaneously with the data study described previously. However, final application of any newly developed mode splits will require adequate data to work with, so in part this project should follow the above.

*Timing:*

This would be interactive with the development of good trade data; the bulk of the predictive work using elasticities to develop freight mode splits would probably be done after the initial data study is complete. In the future, adjustments in the predictive model might be necessary as it is found how good a job of forecasting it does, of future trade volumes, tonnage, and dollar value.

**Issue 37: Impact of charges on international marine cargo on cargo flows through the region, is not known**

There are often proposals to place additional charges on international marine cargo, to provide for mitigations relating to growing truck and rail traffic; however, it is unknown to what extent and at what levels of charges, this could cause discretionary marine cargo to migrate to other ports on this coast or to other international trade routes. This could have negative impacts on the southern California economy. Some level of charges may

indeed be justified to help in providing needed infrastructure to conduct through freight, i.e. enhance the ability to conduct freight across country or to the hinterlands, adding another reason why we need to know what the impact of these charges would be.

*Solution:*

Conduct a study of discretionary flows of international marine cargo versus cargo captive to local markets, including an evaluation of charges already developed in conjunction with the Alameda Corridor; to develop that costing point where discretionary cargo shifts to other ports or other modes, with possible adverse economic and environmental impacts. This will include a modal evaluation including the break point between truck and rail in terms of distance, a detailing of which markets our ports are competitive in, evaluation of waterborne versus non waterborne intermodal traffic, an assessment of potential charges versus overall transport costs, impacts of transit time as compared to costs, future trends in productivity, economies of scale, competitive positions between competing ports, and competitive advantages of different modes..

*Studies:*

Some relevant work has already been conducted in bonding studies for Alameda Corridor implementation; in other port studies; and in the Truck and Rail Study. A RFP to conduct this port diversion study is in the process of being released.

*Recommendation:*

This study can be conducted independently of the data collection effort, but could feed into the mode split study.

*Timing:*

The study should be conducted in the 2001-2002 Fiscal Year as it is necessary in order to move forward with innovative railroad infrastructure financing proposals and to shed light on the advisability of SB 1 which proposes to impose new fees on port traffic.

**Issue 38: Shipper confidentiality relating to data**

Shippers and carriers are reluctant to release data on specific origins, destinations, commodities carried, frequency, and specific addresses, for reasons that such data is proprietary and they want to avoid their competitors getting access to it.

*Solution:*

An evaluation is needed of ways to make freight commodity and flow data available in at least aggregate form, including study of what methods have worked in the past, and what may be available through new technology. Suggestions are that sometimes university students interviewing truckers are successful as they are seen as neutral parties; or use of well-known consulting firms with a reputation for maintaining confidentiality may be an effective solution. It has also been suggested that transponders be placed on trucks to monitor their movements.

*Recommendation:*

Conduct a small-scale study of the relative effectiveness of ways to maintain shipper confidentiality.

Timing:

This should be relatively near-term

**Logistics**

**Issue 39 : An assessment of regional warehousing and other third-party logistic company location and operations is needed for the region**

The SCAG region has a large number of warehouses and third-party logistics firms, especially distributed along the corridor that extends from the Ports to downtown Los Angeles, and thence east along the Sr-60 into the Inland Empire. The functions and hours of operation of these firms, and their relation to regional trucking and industrial and commercial activity, are poorly known. Although some warehouses are believed to operate on a 24-hour basis, or at least during evening hours, it is possible that an expansion of warehouse hours might allow additional trucking to be diverted away from daytime and peak periods, reducing the demand for truck lanes or “buying time” by reducing some of the demand until such lanes can be implemented. (Note, however, that the myriad of small businesses in the region that are dependent on trucking could probably not be served at night; probably this strategy will only apply to major companies.)

Solution:

Conduct a study of the various specific kinds of warehousing needed by different industries, freight forwarders, freight consolidators/deconsolidators, customs brokers, etc., and determine transloading activity. Indicate their functions such as handling import, export, domestic, air and marine cargo, etc., and determine associated containers storage yards and truck service facilities. Determine whether for this corridor, significant volumes of freight that currently moves during daytime hours could be diverted to night warehousing or other such activity. Indicate scenarios that might favor night operation, and factors that would militate against it.

Studies:

The 01-02 OWP includes a Warehouse Logistics Study to conduct this evaluation. No RFP let thus far.

Schedule:

This study should be conducted in 2002, i.e. near-term.

**Finance**

**Issue 40: Freight factors need to be developed for increasing funding for regional goods movement projects, towards TEA-21 reauthorization.**

It is widely believed that states and regions that serve as major international gateways, with seaports linked to transcontinental railways and interstate highways, and international border crossings, bear a disproportionate amount of the burden of providing and maintaining freight infrastructure that is beneficial to the entire country and facilitates international trade.

*Solution:*

Conduct further work be conducted on freight factors that can be used to facilitate increased funding to California, including the SCAG region, for freight infrastructure projects.

*Previous and on-going studies:*

These include a SCAG staff study conducted in the late 1990's; work by the GMAC freight factors Subcommittee; and on-going work by SCAG's Government Affairs Section. The GMAC has expressed interest in making this a priority for the full committee or a subcommittee. Studies of freight factors for allocation of federal transportation funds are included in the 01-02 OWP under Goods Movement Regional Priorities; no RFP let thus far.

*Recommendation:*

Working with GMAC, reactivate staff work on freight factors.

*Timing:*

This should be done in the immediate term.

Docs # 61481. A.H. 11/11/01, evening.